UC-NRLF
$B 69 670

LIBRARY
OF THE
UNIVERSITY OF CALIFORNIA.
Received Dec., 1893.
Accessions No. 53790. Class No.

Digitized by the Internet Archive
in 2007 with funding from
Microsoft Corporation

http://www.archive.org/details/manualofcontinua00wyarrich

MANUAL OF CONTINUATION SCHOOLS AND TECHNICAL INSTRUCTION.

MANUAL

OF

CONTINUATION SCHOOLS

AND

TECHNICAL INSTRUCTION.

BY

CHARLES HENRY WYATT,

CLERK OF THE MANCHESTER SCHOOL BOARD.

PRESIDENT OF THE SCHOOL BOARD CLERKS CONFERENCE, 1891-2.

LIBRARY
OF THE
UNIVERSITY
OF
CALIFORNIA.

ILLUSTRATED.

JOHN HEYWOOD,
Deansgate and Ridgefield, Manchester;
2, AMEN CORNER, LONDON, E.C.

[1892]

LC5256
G7W9

53790

TO

HIS GRACE THE DUKE OF DEVONSHIRE, K.G.

CHANCELLOR OF THE UNIVERSITY OF CAMBRIDGE,

AND PRESIDENT OF THE NATIONAL ASSOCIATION FOR THE PROMOTION

OF TECHNICAL AND SECONDARY EDUCATION,

THIS VOLUME

IS RESPECTFULLY DEDICATED BY HIS KIND PERMISSION.

LIBRARY OF THE UNIVERSITY OF CALIFORNIA.

PREFACE.

In my work connected with education I have often had occasion to experience the ready way in which those who are similarly engaged render assistance and give information one to another, and, in the preparation of this Manual, I have from many sources received valuable help and encouragement.

To all my friends, who have assisted me, I have now the happiness of giving my warmest thanks. Particularly I should like to mention the names of Mr. James Scotson, Mr. R. L. Taylor, Mr. J. S. Walker, Mr. P. Cowen, Mr. Reay, and Mr. W. Nelson.

I have also to thank the Controller of Her Majesty's Stationery Office for permission to incorporate in this Manual various Government publications.

C. H. W.

Manchester, 23*rd September*, 1892.

LIBRARY OF THE UNIVERSITY OF CALIFORNIA.

CONTENTS.

CHAPTER I.

INTRODUCTION ....pp. 1 to 7

CHAPTER II.

EVENING CONTINUATION SCHOOLS.

Scheme of Instruction — Time-tables — Elementary Subjects—Special Subjects for Boys and Young Men: Elementary Science—Elementary Art—Shorthand—Book-keeping—English History—Geography taught by the Magic-lantern—Scheme of Lessons—Slides, Lanterns, &c.—Wood-carving—Tools, Benches, &c.—Special Subjects for Girls and Young Women: Cookery—Stoves—Utensils—Needlework and Cutting-out—Dressmaking by Tailor Measurement—Subjects Earning Grants—Prizes—Examinations—Hints on General Management—Fees—Code Requirements — Teachers — Grants — Balance Sheet—Evening School Code ....pp. 8 to 53

CHAPTER III.

ADVANCED EVENING SCHOOLS—COMMERCIAL.

The Commercial Evening School—Scheme of Instruction—Time-tables—Commercial Handwriting—Arithmetic — Book-keeping — Shorthand—Type-writing—Machines—Modern Languages—Commercial Geography and History — Lectures on Banking — Insurance — Commercial Law—Prizes—Examinations—Hints on General Management—Fees—Code Requirements —Grants—Teachers—Balance-sheets ....pp. 54 to 77

CHAPTER IV.

ADVANCED EVENING SCHOOLS—TECHNICAL INSTRUCTION FOR WOMEN AND GIRLS.

The Evening Institute for Women and Girls—Scheme of Instruction—Time-table—Advanced Cookery—Millinery—Needlework and Cutting-out — Dressmaking — Laundry Work — Fittings and Appliances — Lectures on Sick-nursing — Physiology — English Literature and Composition — Prizes and Certificates — Examinations — Exhibitions of Work—Hints on General Management—Fees—Code Requirements—Teachers—Grants—Balance-sheet.............................pp. 78 to 88

CHAPTER V.

SCIENCE AND ART EVENING SCHOOLS.

Science and Art Evening Schools—Schemes of Instruction—Time Table—Rules and Regulations of Science and Art Department—Subjects of Instruction—Chemical Laboratories—Apparatus and Reagents for Chemistry—Indispensable Apparatus for Science Teaching—Practical Hints on Management of Schools and Classes—Examinations—Prizes, Exhibitions, and Scholarships—Qualifications of Science Teachers—Qualifications of Art Teachers—Fees—Grants—Balance-sheet—Libraries ....pp. 89 to 135

CHAPTER VI.

MANUAL INSTRUCTION IN WOODWORK.

Manual Instruction—Scheme for Day and Evening Schools—Regulations of Science and Art Department—Examinations—Hints on Organisation of Classes—Teachers—Workshops—Benches—Tools and Fittings—Grants Scheme of Teachers' Certificates (City and Guilds of London Institute) ....pp. 136 to 151

CHAPTER VII.

MISCELLANEOUS.

Singing Classes—Special Classes for Deaf Mutes—Teachers' Diplomas and Certificates in Cookery and Laundry Work—Matriculation Classes—Class Instruction in Orchestral Music ....pp. 152 to 158

CHAPTER VIII.

HIGHER GRADE SCHOOLS.

Schemes of Instruction—Organised Science School—Art Instruction—Literature—Commercial Subjects—Time-tables—Scholarships and Prizes—Examinations—Hints on General Management—Teachers—School Fees—Grants—Balance-sheets—Plans of Higher Grade School ....pp. 159 to 188

CHAPTER IX.

TECHNICAL INSTRUCTION (ADVANCED).

Technical Instruction (Advanced)—Science and Art Applied to Trades and Manufactures—The City and Guilds of London Institute—Programme of Examinations in Technological Subjects—Science and Art Examinations—Scholarships and Exhibitions—Subjects of Technical Instruction ....pp. 189 to 215

APPENDIX.

PAGE

PART I.—The Technical Instruction Act, 1889 219
- The Local Taxation, &c., Act, 1890 224
- The Education Code (1890) Act, 1890 230
- The Technical Instruction Act, 1891 232
- The Schools for Science and Art Act, 1891 234
- The Technical Schools (Scotland) Act, 1887 235
- The Technical Instruction Amendment (Scotland) Act, 1892... 240

PART II.—Plans, Fittings, Specifications, &c. .... pp. 243 to 256
- (i.) Chemical Laboratories 245
- (ii.) Cookery Rooms 249
- (iii.) Laundries 252
- (iv.) Manual Instruction Rooms 255

PART III.—"Evening Schools," a paper read at the School Board Clerks Conference, 1889 259
- "School Boards and Technical Instruction," a paper read at the School Board Clerks Conference, 1891 269

INDEX .... pp. 281 to 294

LIST OF ILLUSTRATIONS.

	Page
Lantern	22
Screen	23
Cookery Certificate	32
Typewriting Machine	62
Plans of Higher Grade Schools	185, 188
Plan of Chemical Laboratory	245
Benches for Chemical Laboratory	247
Interiors of Chemical Laboratory	248
Plan of Cookery Room	249
Cookery Chests	250
Cookery Stove	251
Plans of Laundry	252, 254
Interior of Laundry	253
Trough for Laundry	254
Plan of Manual Instruction Room	255
Bench for Manual Instruction	256

MANUAL OF CONTINUATION SCHOOLS AND TECHNICAL INSTRUCTION.

CHAPTER I.

INTRODUCTION.

THIS Manual is intended to meet the requirements of Authorities who are charged with the provision of Continuation Schools and Schools for Technical Instruction.

The scheme adopted is, first to deal with the ordinary Elementary Evening School in all its ramifications, leading up to higher work now possible under the New Code of 1891, the various departments of Commercial Education and Technical Instruction for women and girls being dealt with, and next in order, Science and Art Evening Schools, Manual Instruction, Miscellaneous Subjects of Instruction, and Advanced Technical Instruction, each receive attention.

Higher Grade Schools, as they are generally called, are so closely linked with Technical Instruction that it has been thought well to devote a portion of the Manual to them. These schools are rapidly on the increase in large centres of population, and it will not be long before towns even of moderate size will find the absolute necessity of crowning their supply of public elementary school provision by the establishment of a Higher Grade School, where special arrangements may be effectively made for the instruction of those pupils whose circumstances allow them to remain at school after passing Standard VI., and also of those who may be induced by scholarships to remain for a year or two longer at school than is usual, in order to obtain the benefits of such instruction as is contemplated in the scheme of Organised Science Schools carried on under the supervision of the Science and Art Department of South Kensington.

Examples will be given of Higher Grade Schools, where not only is justice done to Science and Art, but Literature, Commercial Education, and Instruction in Manual Arts, are all embraced in the course of studies.

The object of the Manual is to aid in the organisation and management of all the various kinds of schools and classes enumerated; and it is hoped that the information given will be found to be of value to the educational authorities concerned, and also to the teachers of the schools, upon whose efforts the success of all such undertakings must largely depend.

All instruction in the various kinds of Evening Schools should be so arranged as to gradually lead pupils up from the elementary work of the Primary Schools to the highest stages of Technical Instruction.

To insure the success of Technical Instruction it is of supreme importance that there should be channels of supply by which pupils on leaving the Public Elementary School may be led to continue their education in advanced subjects of instruction suited to the varied walks of life they will be called upon to follow.

To those who have studied the problem of public instruction, as developed in this country during the past fifty years, nothing is clearer to see than that it was to the lack of such channels of supply the comparative failure of the old Mechanics' Institutions was due.

It is unnecessary here to review at any length the history of the present movement in Technical Instruction which is making itself felt throughout the whole of the United Kingdom. The appointment of the Royal Commission on Technical Instruction was fully justified by the facts brought to light in the admirable Report issued by the Commissioners in 1882, and the proceedings of this Commission should be carefully read by all who are desirous of fully understanding how it has come about that the country has at last seriously taken in hand the making of better provision for the higher instruction of the people. The Report of this Commission caused public attention to be immediately drawn to the necessity of the expenditure of public money in the development of higher instruction for those who for the most part have been educated in childhood at our Public Elementary Schools, and who, of course, form the great mass of the people.

The importance of Continuation Schools (both Day and Evening) leading up to Higher Technical Instruction in the application of Science and Art to Trade and Manufactures was very forcibly brought home to the nation at large by the inquiries of the Royal Commission on the Continent and in the United States of America. It was clearly shown that many countries had for a long time been fostering this kind of instruction, to the great advantage of their own people, and, it is to be feared, to the consequent disadvantage of our own countrymen who are called upon to compete with them in trade and manufactures.

Another phase of the education question has also been prominently brought to the front in recent years. Owing to the early age at which children reached the standard of full time exemption from school attendance large numbers were free from the obligation to attend day school two years before they were eligible for full-time employment in the workshop or mill. Given Standard V. as the test for full-time exemption compulsory education applied from the age of five insured the child reaching the standard which was supposed to complete its so-called education in many cases at the age of eleven. Freedom from school at such an age, coupled with inability to work full time, simply meant the manufacture of the loafer and the ne'er-do-weel.

Of no less importance has been the sustained attention now for many years paid by some of the most eminent of our public men to the question of how best to raise the lives of our people and promote not only their material prosperity but also, what is after all of more vital importance, to foster a taste for intellectual enjoyment, in order to save young people from the snares of drink, degradation, and sin, leading to crime and misery by innumerable roads.

The passing of The Technical Instruction Acts of 1889 and 1891, and the devotion of large sums of money (under The Customs and Excise Act, 1890) by County Councils throughout England, Wales, and Scotland, have given a great impetus to the establishment of schools and classes in all parts of the country. In this direction should also be mentioned The Scotch Technical Instruction Act, 1887, which, although not yet generally adopted throughout Scotland, is now receiving considerable attention, and will, no doubt, lead to important additions being made to the present admirable system of Primary and Secondary Schools in that country, which is already so justly famed for its love of education.

In the zealous promotion of Technical Instruction, the development of Evening Continuation Schools and of kindred institutions, the labours of the Duke of Devonshire, the Right Hon. Arthur Acland, M.P., Mr. William Mather, M.P., Sir Henry Roscoe, M.P., and Mr. Samuel Smith, M.P., demand recognition. The interest taken by the Education Department in the reform of our Night Schools is shown in the valuable concessions contained in the New Code of 1890 and the Minute of 31st May, 1892, which have now released Elementary Evening Schools from the trammels of the three R's, and to a considerable extent have given to Managers the opportunity of offering variety in the kind of instruction imparted. Although this is not the place to discuss the question, yet I cannot forbear adding how great would be the obligation the Education Department would confer on education if they would abolish individual examination and payment by results in Evening Schools. Let there be a fixed grant, reckoned on the average attendance, the conditions being proper management and personal supervision on the part of the Managers, ample and competent teaching staff with proper remuneration, everything necessary by way of equipment, and a satisfactory report from H.M. Inspector, based upon at least two visits of inspection to the Night School during the session, leaving complete freedom to the Managers to teach any subject they may think suited to the requirements of the pupils. Such a reform would be the salvation of our Elementary Evening Schools, and instead of a beggarly 52,000 pupils in attendance (report of Education Department, 1890-91), they would be attended by hundreds of thousands, who now drift out of the hands of the schoolmaster at thirteen years of age, or before, and who are sadly in need of further training and culture.

With Evening Schools generously planned and wise in their co-ordination they would become the natural resorts of the bulk of our young people, who in mature life would take care that their children in turn attended such schools, in order to receive the benefits of their nurture and instruction.

Those of my readers who are interested in this question I would refer to the papers on "Evening Schools" and "School Boards and Technical Instruction" to be found in part III. of the Appendix to this Manual.

The work of Technical Instruction in this country is, as has been well remarked by the Duke of Devonshire in his introduction to "The Record of Technical and Secondary Instruction," only now in its initial stage: "The organisations which are now taking shape throughout the country will exert a most powerful influence on the progress of Technical Education for many years to come. It is, therefore, of the highest importance that those on whom the duty devolves of proposing and of carrying out these schemes should have the means placed at their disposal of informing themselves of the steps which are being or have been taken by other authorities." Applied to my own work, these words very aptly express the motives which prompted the issue of this Manual.

The need of a practical guide to the establishment and efficient maintenance of the various kinds of Day and Evening Schools, either coming within the provisions of "The Technical Instruction Acts" or preparatory to instruction promoted by such Acts, has been forcibly brought home to me by the very large number of applications I have received from both official and voluntary sources for information relative to the schools and classes which I have had the honour to organise and direct in Manchester under the control of the School Board. The considerable measure of success which has attended the work in Manchester has been the means of drawing public attention to the operations which, during the past few years, have taken place in the City for the extension of varied kinds of Technical Instruction, particularly in Evening Schools.

The particulars of the contents of the Manual will give a clear idea of the work, and I hope that what the publication may lack in literary excellence, may be compensated for by the practical nature of the hints thrown out. Considerable misconception exists upon the equipment and management of the various kinds of schools and classes, and I hope that by following out the hints here given much trouble and unnecessary expense may be saved to those engaged in the work of providing Technical Instruction.

The field of work covered by the instruction to be supplied by the various kinds of schools and classes coming within the scope of the Manual is exceedingly vast, and it is not claimed for the book that it can in any sense be said to cover the whole. The work of supplying Technical Instruction will be the growth of many years yet to come, but I venture to express a hope that the Manual may prove of use as a pioneer in the great undertaking which will, I believe, in the future add to the power and happiness of our great country.

CHAPTER II.

EVENING CONTINUATION SCHOOLS.

The Education Department commenced to give grants of money to Elementary Evening Schools in 1851-2.

The old-fashioned Night School, which confined its instruction to reading, writing, and arithmetic, and which in its work was a more or less efficient repetition of the Public Elementary Day School, is a thing of the past. I have extracted from the Annual Reports of the Education Department the following figures, showing the number of pupils in attendance at Elementary Evening Schools in England and Wales from 1870 to 1891:—

ELEMENTARY EVENING SCHOOLS—AVERAGE ATTENDANCE.

Year Ended.	Church of England.	British, Wesleyan, &c.	Roman Catholic.	Board.	Total.
August, 1871	59,536	13,330	10,591	......	83,457
1872	44,615	12,336	8,962	475	66,388
1873	29,226	10,934	4,553	1,260	45,973
1874	30,176	11,502	3,228	3,784	48,690
1875	28,499	12,914	2,873	4,096	48,382
1876	28,717	13,146	2,832	5,163	49,858
1877	31,992	14,269	3,722	7,802	57,785
1878	30,195	13,855	3,854	8,597	56,501
1879	25,101	13,917	4,171	9,341	52,530
1880	20,742	11,880	3,928	9,519	46,069
1881	17,951	10,949	3,034	7,288	39,222
1882	14,565	9,658	2,247	6,665	33,135
1883	11,432	8,299	1,408	7,154	28,293
1884	9,419	7,609	1,274	6,132	24,434
1885	8,777	6,964	1,220	7,272	24,233
1886	8,406	6,335	1,039	10,309	26,089
1887	9,738	7,266	693	12,887	30,584
1888	10,358	7,459	668	14,815	33,300
1889	10,298	8,307	712	17,801	37,118
1890	10,338	8,193	814	24,002	43,347
1891	10,894	8,488	1,027	31,565	51,974

The foregoing figures are interesting, as they show how the spread of Elementary Education, after the passing of Mr. Forster's measure in 1870, gradually undermined the supplementary Night Schools. Whilst the Night School attendance stood at the highest in 1870-71, when 83,457 scholars were in average attendance, the lowest point was reached in 1884-85, when the number was only 24,233. Then comes a change, and in the return for 1890-91 the figures are 51,974. The decline of the attendance at the Night Schools was arrested by changes in their organisation and management.

Mr. W. Scott-Coward, H.M. Senior Inspector of Schools for the North-Western Division of England, in his Report for 1887 (Report of the Committee of Council on Education—England and Wales), stated—

> "The Evening School is nearly extinct. Where they flourished a dozen years ago in their tens, they either have disappeared wholly or survive in twos and threes in a struggling fashion. In my original district, now divided into two (Warrington and Wigan), there were in 1874 not less than 90 Evening Schools—there are now, I suppose, not more than 15 or 20. In Manchester the same state of things exists; and Mr. Steele informs me that in Preston, a large cotton manufacturing town, there is only one such school, and only three in the whole district. He thinks this decline 'a very great loss.' In this I agree with him, for to quote him further, 'Compulsory education in the day time may have diminished, but has not altogether superseded the demand for elementary instruction in the evening. If children leave school, as they do, at 12 or 13, they are sure to find out, by the time they are 16 or 18, that a large portion of what they once knew needs reviving. In Preston many young people are unable to go on to the higher instruction, such as the Harris Institute offers, on account of the imperfect state of their elementary attainments; and yet there is, so far as I know, only one Elementary Evening School in the town.'
>
> "I apprehend that among the causes of their decline are the failure of energy in the teachers of Day Schools to continue them; the too rigid character of the instruction and organisation for the

young persons attending them; and the strictness and stiffness of the official rules regulating them. . . . That there is a demand for evening instruction is evident from the readiness with which, in Liverpool and in Manchester, the Recreative Evening Classes are attended. . . . Such institutions and such efforts as provide recreative classes cannot satisfy the general need."

Writing again, in his Report for 1889, Mr. Scott-Coward says, regarding Evening Schools—

"These schools are the Continuation Schools of the day, and any large development of such schools must, it seems to me, spring from the extension and organisation of the Evening School system. That there is a need and desire for them is, I think, plainly apparent in the enormous increase in the centres for Evening Schools started by the Manchester Board. The success which followed their action in 1887-88 stimulated them into still further activity, and in the session of 1888-89 they opened centres in all parts of Manchester, which soon filled with a large number of scholars. A good number were attracted by the novelty of the thing, and soon fell off, leaving behind, however, a strong numerous residuum of students, seriously in earnest to improve themselves. A wide and liberal list of subjects to choose from was drawn up, and numerous teachers were enlisted. Besides the subjects included in the Code, drawing, needlework, and cookery being prominent, drill (for boys and girls), laundry-work, lectures on sick-nursing, dressmaking, and wood-carving are taught. I have taken part in the examination of many of these schools, and can bear witness to the efficiency with which they are conducted· The good order and industry of the scholars of both sexes spoke well for the discipline, and the results of the examinations (varying, of course, with the circumstances of the different schools) give me good ground for belief in the usefulness and value of the work done. . . . The specimens of dressmaking shown to me as done by the girls seemed well done; and the cookery classes I visited, in which both theory and practice was being taught, were filled with interested girls and young women anxious to learn."

It will be readily admitted that there is a great field of work open to these Evening Schools of an elementary character. Each year there leave our public Elementary Day

Schools many hundreds of thousands of young people to whom a couple of years attendance at this class of night school would be of the greatest value. It is not easy to obtain reliable statistics as to the number eligible for such instruction, but we know that in England and Wales about 500,000 boys and girls attain the age of thirteen each year. If all these attended night schools for a space of two years, it would mean an attendance of a million. Of course, even by the aid of direct or indirect compulsion, such an attendance would not be attainable, but suppose half the number attended with regularity, then we should have an attendance of 500,000 compared with the 52,000 in the schools during the winter of 1890-91.

To attain success these Evening Schools must be well taught, which means that the teachers must be liberally paid for what is really hard work, have a varied and attractive list of subjects of instruction, and be held in spacious and well-lighted rooms. No opportunity must be lost by the Managers to maintain regular attendance, and it must also be their constant study to improve and add to the attractions of the school. Success in this matter, as in all others, is insured generally by attention to small details.

I will now proceed to deal briefly with the various subjects of instruction which should find their place in every well-matured scheme for Elementary Evening Schools, or Evening Continuation Schools, as I prefer to call them.

SCHEME OF INSTRUCTION, EVENING CONTINUATION SCHOOLS.

Time Tables.—The following are two specimen time tables of Elementary Evening Schools. The time table must be signed by H.M. Inspector at the beginning of the session:—

TIME-TABLE.

....EVENING SCHOOL. BOYS' DEPARTMENT.

	CLASS	Duration of Lesson. 7 to 8.	Duration of Lesson. 8 to 9.
Monday ...	I.	Reading.	Drawing.
	II.	do.	do.
	III.	do.	do.
	IV.	do.	do.
	V.	do.	do.
	VI.	do.	do.
	VII.	do.	do.

	CLASS	Duration of Lesson. 7 to 7-40.	Duration of Lesson. 7-40 to 8-20.	Duration of Lesson. 8-20 to 9.
Tuesday ...	I.	Writing.	Magnetism and Electricity.	Arithmetic or Shorthand.
	II.	do.		
	III.	do.	do.	do.
	IV.	do.	do.	do.
	V.	do.	do.	do.
	VI.	do.	do.	do.
	VII.	do.	do.	do.

	CLASS	Duration of Lesson. 7 to 8.	Duration of Lesson. 8 to 9.
Thursday...	I.	Arithmetic.	Geography Lesson and Magic Lantern Lecture in alternate weeks.
	II.	do.	
	III.	do.	
	IV.	do.	do.
	V.	do.	do.
	VI.	do.	do.
	VII.	do.	do.

SCHEMES OF SPECIAL SUBJECTS.

1. *Geography of India and Canada*
2. *Magnetism and Electricity.*—Attraction, Repulsion, and Polarity, as illustrated by the Magnet.
3. *Shorthand.*—To work from slow dictation a passage from a first reader.

(SIGNED) .... *Principal Teacher.*

Approved on behalf of the Education Department,

...., *H.M. Inspector.*

...., 189

Registers marked and finally closed 7-55 p.m.

TIME-TABLE.

....EVENING SCHOOL. GIRLS' DEPARTMENT.

	CLASS	Duration of Lesson. 7 to 7-40.	Duration of Lesson. 7-40 to 8-20.	Duration of Lesson. 8-20 to 9.
Monday ...	I.	Reading.	Writing.	Arithmetic.
	II.	do.	do.	do.
	III.	do.	do.	do.
	IV.	do.	Arithmetic.	Composition.
	V.	do.	do.	do.
	VI.	Composition.	Reading.	Arithmetic.
	VII.	do.	do.	do.

	CLASS	Duration of Lesson—7 to 9.	
Tuesday ...	I.	Cookery for all Classes above Standard IV.	
	II.	do.	do.
	III.	do.	do.
	IV.	do.	do.
	V.	do.	do.
	VI.	do.	do.
	VII.	do.	do.

	CLASS	Duration of Lesson. 7 to 8.	Duration of Lesson. 8 to 9.
Thursday...	I.	Arithmetic.	Needlework for the whole
	II.	do.	School.
	III.	do.	do.
	IV.	do.	do.
	V.	do.	do.
	VI.	do.	do.
	VII.	do.	do.

SCHEMES OF SPECIAL SUBJECTS.

1. *Needlework* (Code Scheme.)

(SIGNED) ...., *Principal Teacher.*

Approved on behalf of the Education Department.

...., *H.M. Inspector*

...., 189

Registers marked and finally closed 7-55 p.m.

Elementary Subjects.—Reading, writing and arithmetic, should be intelligently taught. In the matter of reading I would banish all ordinary Day School class readers. The information given in such books is generally scrappy and unsuitable for the night scholar in whom, if possible, it would be well to develop a taste for pure literature. There is plenty of good fiction published in a handy and cheap form. Such books as "Silas Marner," "Tom Brown's School Days" (for boys), "Mary Barton" (for girls), "Cranford," and most of Dr. Smiles' works are well suited.

SPECIAL SUBJECTS FOR BOYS AND YOUNG MEN.

Elementary Science. — These allowed by the Code are Mechanics, Animal Physiology, Botany, Agriculture, Horticulture, Chemistry, Sound Light and Heat, Magnetism and Electricity, Navigation. When there is apparatus available and a teacher able to demonstrate frequent experimental lessons should be given.

Elementary Art.—Drawing should be taught in the standards, and, of course, an ample supply of drawing copies provided. The models should be kept clean and in good order, and as the requirements of the Science and Art Department in the matter of drawing for Elementary Evening Schools are somewhat severe for the class of pupils in Night Schools, care should be taken that this important subject is effectively taught. It is a good plan to give a certificate to each pupil who passes the examination. The following is the syllabus of the Science and Art Department:—

SYLLABUS OF DRAWING FOR ELEMENTARY SCHOOLS.

The standards of examination in Drawing are as follows, and they must be taken consecutively:—

STANDARD I.—Drawing, freehand, and with the ruler, of lines, angles, parallels, and the simplest right-lined forms, such as some of those given in Dyce's Drawing Book. (To be drawn on slates.)

STANDARD II.—The same on paper.

STANDARD III.—(*a*) Freehand drawing of regular forms and curved figures from the flat. (*b*) Simple geometrical figures with rulers.

STANDARD IV.—(*a*) Freehand drawing from the flat. (*b*) Simple scales and drawing to scale.

STANDARD V.—(*a*) Freehand drawing from the flat. (*b*) Drawing from rectangular and circular models, and from easy common objects. (*c*) Geometrical figures with instruments and to scale.

STANDARD VI.—(*a*) Freehand drawing from the flat. (*b*) Drawing from models of regular forms and from easy common objects. (*c*) Plans and elevations of plane figures and rectangular solids in simple positions, with sections.

STANDARD VII.—(*a*) Freehand drawing from the flat. (*b*) Drawing any common object and casts of ornament in light and shade, or (b^1) Geometrical drawing more advanced than in V. (*c*) Plans and elevations of rectangular and circular solids with sections.

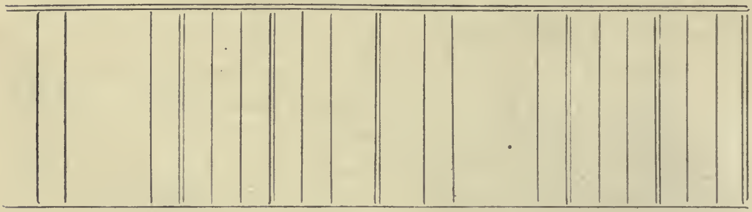
N.B.—In order to interest the children it is advisable to teach them to draw as early as possible from actual objects, such as the doors and windows, furniture and apparatus of the schoolroom. It will also be found quite possible and very desirable to go beyond the foregoing standards in teaching. Thus freehand drawing of bold curves may be introduced in Standards I. and II.; and exercises may be advantageously given, in all standards, in drawing from memory.

No scholar may be presented for examination in a lower standard than the third in Evening Schools.

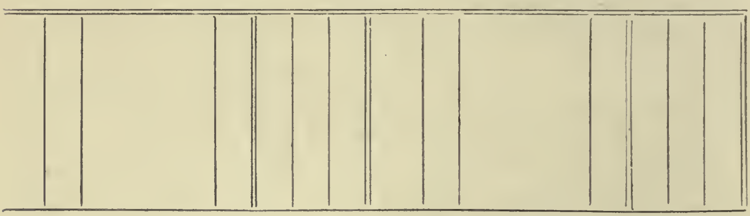
Shorthand.—This can only be of an elementary nature. To write from slow dictation (at the rate of at least ten words a minute) a passage from a first reader not used in the school is as much as can be expected for the first year. For complete scheme see Evening School Code, page 52 of Manual.

Book-keeping.—The elements of this important subject may be taken in some schools. Cheaply-ruled cash-books, day-books, invoice books, and ledgers should be provided if the funds allow; if not, the pupil should be taught the various kinds of ruling on sheets of foolscap. The following are the rulings of Cash Book and Ledger:—

CASH BOOK.



LEDGER.



The instruction in book-keeping should be as realistic as possible, the supposed transactions having reference to the trade of the district, and good blackboard teaching is indispensable. For scheme see Evening School Code, page 53 of Manual.

English History.—It would be well if this important subject could find a place in some of our Night Schools. It is almost totally neglected in the Public Elementary Day Schools, and consequently the great mass of our boys and girls are growing up totally unacquainted with the history of our glorious country, and without the incentive to good to be obtained by an acquaintance with the noble deeds of those who have made the history of our great nation. A very experienced Inspector of Schools, writing on this matter quite recently, said:—

> "History, as a study, does not exist practically in our schools. It is indeed very largely read, but I fear with little fruitful effect,

> and simply for the reason that the reading books (as I have shown) are treated not as a means of gaining knowledge, but as instruments for the vocal exercise of reading aloud. The subject matter is neglected, and soon escapes from the memory. This absence of historical teaching and knowledge in our schools is, I consider, a very serious deficiency. Our children know nothing of the past of their country—of the men who have made it great, of the laws and institutions under which they live, of their antiquity and origin. Is it prudent, in this restless age, to leave the mind of the masses as unlinked as it is with the past, by giving them no historical knowledge to cement them with it? In my own district, with a population now estimated to exceed 700,000, I do not know half a dozen schools in which any history is taught. Is it possible to find a parallel in any other organised system of public instruction in the world."

These weighty words very clearly express the views of everyone competent to judge of the importance of teaching history in our schools.

If taken in the Night Schools, no very extensive scheme can be adopted. Biographies of a few leading historical personages from some period should alone be taken. Not very much can be expected from the pupils, seeing that probably none of them will have taken the subject in the Day School. For scheme see Evening School Code, page 48 of Manual.

Geography.—It is no use trying to cover the ground set forth in Schedule II. of the New Code; the field is too large, and in the limited time at the disposal of the teachers of night schools it would be useless to attempt the work.

The following is a scheme which was launched in the Evening Schools of the Manchester School Board during the session of 1891-92, and was approved by H.M. Inspector:—

India and British North America: Printed notes of lessons prepared by Mr. James Scotson (headmaster of the Manchester Central Board School) have been supplied to the teachers. Special attention has been paid in the lessons to the physical features of the countries dealt with—trade, scenery, manufactures, &c. The scheme also embraces a series of bi-weekly magic-lantern views, with specially-prepared lectures given by the headmaster of the school. The views have been carefully selected to suit the lessons, and are all uncoloured photographs.

The following list of the slides will give some idea of the course. It should be explained that in the case of India it is supposed that we leave London by steamer for the country we are about to visit, places of importance *en route* being described; and in the case of British North America, that we embark at Liverpool.

LIST OF SLIDES.

ROUTE TO INDIA—VIA SUEZ CANAL.

Map of the World.
Ocean Steamer.
Thames, at London Bridge.
Thames, with the Tower.
Greenwich.
Ocean Steamers.
Mouth of the Thames.
Battle Abbey, near Hastings.
Beachy Head.
Brighton.
Isle of Wight.
Teignmouth, from Torquay Roads.
Teignmouth Rocks.
Torquay Harbour.
Torquay Rocks.
Torquay Sands.
Dartmouth, from Dyer's Hill.
Dartmouth Butter Walk.
Dartmouth.
Britannia Training Ship.
Start Point.
Breakwater.
Plymouth.
Eddystone Lighthouse.
Lizard Rocks.
Lizard Lights.
Lloyd's Signal Station.
Cadiz.
Gibraltar.
Gibraltar, from Europa Point.
Town and Bay.
Marseilles.
Harbour of Marseilles.
Fort Napoleon.
Museum.
Fountain.
Corsica.
Bay of Naples.
Harbour of Naples.
Marina and St. Elmo.
Palazzo Reale.
Villa Nazionale.
Pompeii.
Forum at Pompeii.
Basilica.
Temple of Venus.
Amphitheatre.
Street of Tombs.
Capri Marina.
Valetta.
Entrance to Harbour.
Fleet in Harbour.
St. John's Church.
Marsa Muscat.

Alexandria.
Lesseps' Place.
Port Said.
Portrait of Lesseps.
Cairo.
Street Scene.
Irrigation of Land.
Professional Beggar.
View of Suez Canal.
View of Ismailia.
Ship passing through the Canal.
Fellaheen.
Bedouin Sheik.
Camels in the Desert.
Camel Drivers.
Bedouin Women.
Pyramids.
Nubians.
Libyan Desert.
Convent of Sinai.
Mount Sinai.
Journeying in the Desert.
View of Aden.
Young Divers.
View of Bombay.
Map of India.

INDIA.

Map of the World.
Bombay.
Bombay Fort and Esplanade.
Parsees.
View of Cawnpore Ghát.
View of Memorial Well.
View of Lucknow.
Snake Charmers.
Benares Ghát.
Benares—Group of Priests on Steps of Temple.
Benares—Great Mosque.
Fakir.
Sacred Bull.
Calcutta.
Map of India.
Apple Tree Canal, Foliage.
Apple Tree Canal, Foliage (2).
Apple Tree Canal, Trees Overhanging.
Poplars on the Apple Tree Canal.
Entrance to the Dal Lake.
Cascades near Kashmir.
Poplars.
Poplar Avenue.
Interior of Cave Ummernath.
Glacier in the Himalayas.
Another Glacier.
Snow Bridge.
Mountain Scene.
Scind Valley.
Watercourse, Scind Valley.
View near Somain.
Natural Arch.
Palace of Akbar.
Foliage in Forest of Murree.
Walk along the Mountain Side, Murree.
Walk in the Forest.
Natural Fernery in the Forest Murree.
Muttra.
Hardwar.
Madras.
Madras--Reception of Viceroy at the Harbour.
Madras—Landing of Cargo on Beach.
Chepauk Palace.
Fort St. George.
Madras—River Cooum.
Nautch Girl.
High Caste Girls.
Altomsh's Tomb.
Ala-ud-din's Gateway.
Nizam-ud-din's Tomb.
Jumma Musjeed.
Sufter Jung's Tomb.
View of Taj-Mahal (front).
The Taj from River Side.
Street in the City Amritsar.
View of the City, with the Golden Temple and Large Tank.
Golden Temple and Clock Tower, Amritsar.
Ahmedabad—Street Scene in Native Town.
Rani Sipri Mosque.

Shevaroy Hills—On the Ghát Yercaud.
Shevaroy Hills—Lake Yercaud.
Tanjore—The Great Pagoda.
Trichinopoli Rock.
The Fort of Seringapatam.
Falls of the Cauvery.
The Ganga Chooka Falls.
The Burr, Chooka Falls.
View of the Town of Mysore.
The Palace of Mysore.
Bangalore—Palace of the Maharajah of Mysore.
Colombo.
Temple of Juggernaut.
Temple near Juggernaut.
A Gigantic Mango Tree.

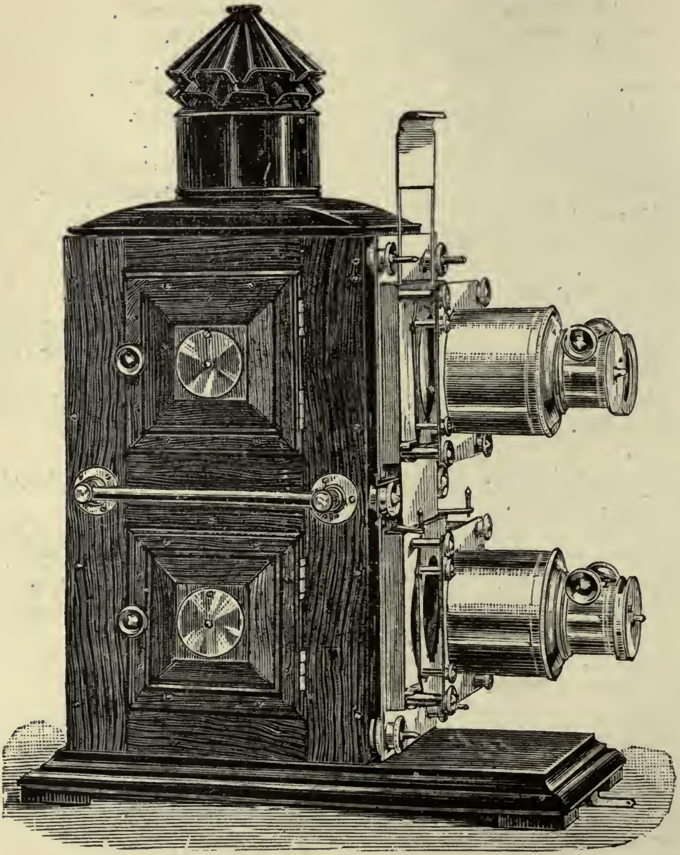
CANADA.

St. George's Landing Stage.
Steamer.
Little Orme.
Holyhead.
Queenstown.
Iceberg.
Map of Canada
Quebec.
Point Levis, from Dufferin Terrace.
Quebec, from Point Levis.
Panorama, from Laval University.
View from Citadel.
Montmorency Falls.
River Steamer to Montreal.
Montreal Panorama, from Mount Royal.
James Street.
Bank of Montreal and C.P.R. Offices.
Post Office.
McGill College.
Montreal—View from Notre Dame.
C.P.R. Station, Montreal.
Windsor Hotel.
Windsor Hotel (interior).
River Front and Allan Steamer.
Public Buildings—General View.
House of Parliament
House of Parliament (interior).
Departmental Buildings (east).
Departmental Buildings (west).
The Library.
View from House of Parliament Grounds.
Chaudière Falls.
Timber Raft.
Timber Stacks.
Lieut.-Governor's House, Toronto.
Post Office, Toronto.
University College.
Normal College.
Panorama of City, Hamilton.
The Market, Hamilton.
Falls—Panorama.
Rapids, from the Falls.
Canadian Fall.
Canadian Fall (centre, with spray).
American Fall, from Canadian side, in Summer.
American Fall, from Canadian side, in Winter.
Whirlpool.
Waterwheel to Whirlpool.
Owen Sound.
Sault St. Mary Lock.
Group of Indians.
Canal Locks.
Port Arthur, from Steamer.
Water Street, Port Arthur.
Elevator, Port Arthur.
C.P.R. Elevator, Fort William.
Kaministiquia River, Fort William.
Gathering Maple Sap.
Sleighing.
Iroquois in Canoe.
Indian Tent on Prairie.
Squaw and Papoose.
Keewatin Flour Mill.
Winnipeg.
Winnipeg, from Tower.
Court House, Winnipeg.
City Hall, Winnipeg.
Flour Mill, Winnipeg.
Winnipeg—Main Street.
Streets in Winter.
Buffalo at Silver Heights, Winnipeg.
Hereford Cattle, Silver Heights.

Reaper and Binder at Portage la Prairie.
Flour Mill and Elevator.
Red River Cart.
Brandon Grain Market.
Threshing at Brandon.
Ploughing on Sandison's Farm.
Teams Loaded with Wheat.
Deloraine.
Prairie Scene.
Bell Farm House
Ploughing Stubble.
Sulky Plough.
Threshing on Prairie.
Threshing Machines on Prairie.
Harvest Scene.
Dr. Barnardo's Farm.
Milking Yard.
Medicine Hat.
West End, Calgary
Barracks, Calgary.
Shorthorn Bull.
Ox Team.
Ploughing with Bullocks.
Stock Farm, Manitoba.
Stock Farm.
Cattle Enclosure.
Prairie Stock Enclosure.
Ranche Scene.
Alberta Ranche.
Ranche Cattle.
Noonday Halt on Prairie.
Preparing for "Round up" on Ranche.
Cattle-Pen on Ranche
Bucking Horse.
Stock Enclosure on Prairie.
Sheep Ranche
Settler just arrived on his Farm.
Farmhouse in Manitoba.
First Church in Settlement.
Farm Scene.
Wheat Stacks and Load of Grain.
Wheat Stacks.
C.P.R. Engine.
Railway Tunnel.
C.P.R. Track approaching Rocky Mountains.
C.P.R. Steamer, Parthia.
Train of Pullman Cars.
Emigrant Sleeping Car.
Kananaskis Falls.
Cascade Mountain.
Dining-room, Banff Hotel.
Branch of Bow River.
Kicking-Horse Pass.
A View of British Columbia
Gold Miners on Columbia River.
Stony Creek.
Stony Creek Bridge.
Mount Hermit, near Summit.
Hermit Range.
Looking Out of Ice Cave, Great Glacier.
C.P.R. Station, and Mount Sir Donald Glacier.
Mount Sir Donald, from Glacier Road.
Ross Peak, showing "Loop."
Albert Cañon.
Stern-wheel Steamer on Columbia River.
Ranchman's Holiday on Columbia River.
Artist Paddling on Columbia River.
British Columbia Ranching Ground.
South Thompson River, Kamloops.
Lytton, British Columbia.
Fraser Cañon.
Dining-room, North Bend.
Valley Farm, Agassiz.
Royal City Sawmill, New Westminster.
Loading Logs at New Westminster.
River Steamer, New Westminster.
Vancouver, British Columbia.
Big Logs from Vancouver.
Douglas Pine, Vancouver.
Big Tree in Stanley Park.
C.P.R. Hotel, Vancouver.
Tea Shed, Vancouver.
Victoria.
Government Buildings.

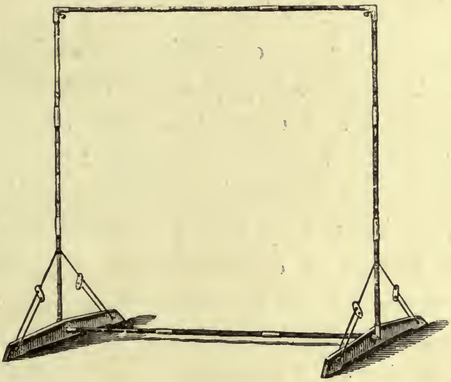
The slides are worth from 1s. to 2s. each, and each set should be carefully arranged in a box.

Lanterns, &c.—The following is an illustration of the kind of lantern used. These lanterns are worth about £20 each.



Compressed oxygen and hydrogen are used in steel tubes. This mode of using the gas is much more convenient than having to rely on indiarubber bags, with weights, &c. The oxygen can be obtained retail, at the places where it is manufactured, at 3d. per foot, and the hydrogen at 2½d. per foot. Each cylinder contains 20ft., and should last, with care, for four lectures. The steel cylinders may be hired or purchased—in the latter case they will cost about 39s. each.

It is necessary to have an experienced man in charge of the lantern during the lecture, the principal teacher acting as lecturer at the screen. When there is a good schoolroom wall no screen is required, as the picture may be thrown on the wall. Where a screen is necessary a piece of Bolton sheeting (size 6ft. by 9ft.) may be suspended against the wall. The value of this sheet will be about 10s. The following is a movable screen of bamboo rod, value £3 3s., to carry a screen 12ft. by 12ft.



As new slides will be required each session, if the course of instruction is changed, it will be found convenient if a system of exchange can be established between different School Boards or bodies of Managers. It takes some amount of care and trouble to select suitable slides for the teaching of geography by means of the lantern. We were under the necessity of obtaining our Canadian slides from Montreal. They are selected from a list prepared for the Canadian and Pacific Railway Company.

It would very much add to the value of such instruction in geography, as I have sketched out, if products of the countries could be shown to the class.

Wood Carving.—This is a subject which may be introduced with advantage into Evening Schools. It is well to explain, however, that it is a somewhat expensive subject to teach. An artisan instructor must, as a general rule, be engaged, and his services for two hours in the evening will be from 3s. 6d. to 5s. About twelve pupils may be instructed at one time in a class. The tools required for elementary work are the following:—

Set of 10 Carving Tools, value 4s. per set.

It will be found most convenient for each pupil to have his own set. These, in a strong box, with a mallet (at 10d.), oil stone (at 4d.), and clips, will cost about 6s. 6d. per set. Care must be taken to get good tools, and arrangements made for the sharpening of them, outside the hours of instruction, by the pupils themselves. The design is drawn on blocks of common wood (size 9in. by 4½in. for beginners), and cut out by means of the tools employed.

A serviceable double bench, made in deal, will cost about 18s. (size 15ft. by 4ft.), affording accommodation for eight pupils at a time.

It is imperative for pupils to practise out of school hours if any progress is to be made. No Government grant can be earned for instruction in wood carving.

SPECIAL SUBJECTS FOR GIRLS AND YOUNG WOMEN.

Cookery.—This is probably the most popular of all the subjects taught to girls in night schools. The instruction may be given in any ordinary school class room which affords sitting accommodation for 72 pupils and room for three or four tables on trestles. (See also illustrations on page 250 for cookery chests, &c.) The room should be supplied with a good gas cooking stove, which in most large districts may be hired on reasonable terms from the authority supplying the gas. The stove known as Davis No. 10 Cooker is a very good stove (See illustration page 251). The stove may, by means of the down pipe, be connected with a gas pipe under the floor, the pipe going through a small aperture cut in the floor boards. If the stove is placed on a small trolly, it may, when not in use, have its supply pipe disconnected and be rolled into a corner of the room. A small lid with hinges will cover the hole in the floor through which the supply pipe is connected with the gas main. The small platform or trolly on which the stove stands should be lined with sheet iron where necessary. If purchased outright the stove would cost £7 15s. 6d. Where possible it is certainly most advisable to hire. The charge in the district I am acquainted with is 2s. 9d. per quarter. During the summer the stove may be returned to the gas authorities and the hirage saved.

COURSE OF COOKERY LESSONS.

TWELVE LESSONS OF TWO HOURS EACH.

1	Demonstration	....	Including cleaning.
2	Practice	....	Bread and cakes.
3	,,	....	Soups and fish.
4	,,	....	Stewing, frying, boiling.
5	,,	....	Invalid cooking.
6	,,	....	Puddings.
7	Demonstration	....	Including cleaning.
8	Practice	....	Cold meat dishes
9	,,	....	Melting fat, curry, macaroni, haricot.
10	,,	....	Pastry.
11	,,	....	Roasting and vegetables.
12	,,	....	Puddings, coffee, tea, &c.

Each practice lesson to commence with ten minutes of theoretical instruction. If desired, demonstrations can be substituted for practice lessons. In night schools, under inspection, half the instruction should consist of demonstrations.

The following is a list of the utensils required by an ordinary cookery class. The prices attached are such as the articles may be obtained at from an ironmonger.

COOKERY UTENSILS.

Quantity.	Articles.	Price.				
		@ s.	d.	£	s.	d.
4	Pans No. 3	1	1½	0	4	6
4	Pans No. 4	1	3	0	5	0
4	Pans No. 6	1	7	0	6	4
1	Fish Kettle	5	6	0	5	6
2	Fry Pans	0	9	0	1	6
1	Cullender	0	5	0	0	5
1	Gravy Strainer	0	4	0	0	4
1	Wire Sieve	0	10	0	0	10
1 Set	Weights and Scales	7	0	0	7	0
3	Dripping Tins	0	10	0	2	6
6	Wood Spoons	0	2½	0	1	3
8	Forks	0	3	0	2	0
8	Knives—Table	0	3	0	2	0
8	Knives—Vegetable	0	3	0	2	0
8	Spoons—Iron Table	0	1½	0	1	0
8	Spoons—Iron Tea	0	0½	0	0	4
8	Cutting Boards	0	9	0	6	0
2	Tin Hand Bowls	0	10	0	1	8
1	Knife Board	0	10	0	0	10
2	Galvanised Wash-up Tins	1	6	0	3	0
2	Galvanised Buckets	0	10½	0	1	9
2	Water Cans	1	6	0	3	0
1	Flour Canister	1	6	0	1	6
2	Scrubbing Brushes	0	8	0	1	4
1	Cocoa Scrubber	0	3	0	0	3
1	Pan Scrubber	0	5	0	0	5
1	Steel	0	10	0	0	10
1	Salt Box	0	10	0	0	10
2 Sets	Measures, not stamped	0	8	0	1	4
2	Nutmeg Graters	0	1	0	0	2
6	Tin Moulds	0	3½	0	1	9
4	Rolling Pins	0	3	0	1	0
1	Spice Box	0	9	0	0	9
2	Flour Dredgers	0	2½	0	0	5
2	Pepper Dredgers	0	1	0	0	2
2	Nail Brushes	0	2	0	0	4
6	Store Jars	0	4½	0	2	3
4	Basins (ordinary, pint)	0	1½	0	0	6
4	Basins (brown, medium)	0	4¼	0	1	5
4	Basins (brown, large)	0	8½	0	2	10
12	Handless Cups	0	0½	0	0	6
12	Plates (small)	0	1½	0	1	6
12	Plates (large)	0	2	0	2	0
2	Jugs (pint)	0	2½	0	0	5
2	Jugs (quart)	0	5	0	0	10
6	Pie Dishes (½ pint)	0	3¼	0	1	7½
12	Pie Dishes (small)	0	3	0	3	0
6	Glass Towels	0	6	0	3	0
2	Cotton Towels	0	5½	0	0	11
6	Dusters	..		0	0	7
6yds.	Towelling	0	4½	0	2	3
1yd.	Floor Cloth	..		0	0	5
2	Oven Cloths	..		0	0	9
2qrs.	Cap Paper	..		0	0	5
2	Paste Cutters	..		0	0	3½
24	Patty Pans per doz.	0	3½	0	0	7
2	Paste Brushes	0	1	0	0	2
2	Cake Tins	0	3½	0	0	7
	Total			£4	16	8

A cupboard is necessary to keep the articles in, and they should always be kept scrupulously clean. It will add to the good appearance of the cookery cupboard if the shelves are lined with clean white paper. The cost of an ordinary upright cupboard to contain utensils will be about £3 10s., made in pitch pine varnished.

Some years ago I had made a Cookery Chest, in which were combined cupboards for the utensils, and tables, and tressels. A detailed illustration of this cookery chest will be found on page 250. These chests are very handy, and where space is scant, no doubt, save room. The cost of such a chest would be about £5, made in ordinary whitewood.

The instruction in cookery in Night Schools consists of lessons covering altogether 20 hours,* of which not more than 4 hours may be in one week. Half of this time of instruction must consist of practical work—*i.e.*, pupils cooking with their own hands—and half must consist of demonstration, *i.e.*, lectures by the teacher. The number under instruction at the demonstration may be 72, and these may be divided into three classes of 24 for practice; to each 24 there must be a teacher, and these pupils may again be divided into batches of six, working together. Twenty-four is the extreme number which may be taken for practice, and, as a rule, with such a class on the rolls, probably from 18 to 20 will attend.

The dishes cooked should be simple and serviceable, and it is well to have a graded scheme of instruction. The recipes may be printed, and taken away by the pupils. With care, there is no difficulty in the teacher covering the cost of the food materials used at the lesson by sales of the cooked dishes to the pupils.

The teacher should be a lady holding the diploma of one of the recognised schools of cookery, and, if possible, an elementary school teacher. The ability to teach is of quite as much importance as the possession of practical knowledge in cookery. Where it is not possible to obtain the services of a lady holding the recognised qualification, application should be made to the Education Department for approval of an otherwise competent teacher able to give the instruction.

---

* In addition to the 24 attendances qualifying for grant in other subjects (Art 106 (*b*) of New Code).

Needlework and Cutting Out.—Where this subject is taught it is well to obtain the approval of H.M. Inspector of a scheme based upon the Code requirements. For scheme see Evening School Code, page 53 of Manual.

Dressmaking.—For the senior pupils in Girls' Schools it is most important to take up this subject, the object being not to teach the trade of dressmaking, but to place in the hands of girls and young women the power to cut out and fit simple dresses for themselves. When we first took up the subject in the Manchester Night Schools I obtained the services of dressmakers from some of the leading shops of the district. The experiment was, however, in nearly every case a failure. The dressmakers were very competent at the trade, but quite unable to instruct a class, and I found that in this as in most other new subjects we must first make our teachers. We adopted the system locally known as dressmaking by tailor's measurement, and obtaining the services of a competent teacher we held, during the summer months of 1890, classes in dressmaking for teachers of public Elementary Schools. We thus obtained a staff of competent teachers, able to teach a class of twenty from the blackboard, how to take measurements for bodices, and how to drape dresses. The patterns are cut by the pupils, first in brown paper, and then in their own materials. They measure one another on the lines taught by the teacher, and a very large amount of success has attended this department of our work. Expensive charts, which invariably accompany all schemes of what is known as "Scientific Dressmaking," are out of the question in the case of the girls who attend our Night Schools. The accessories in a dressmaking class of the kind I have described are—

	s.	d.
1. A simple diagram	0	1½
2. A tailor's measure	2	0
3. A wheel for piercing patterns	0	1½

Subjects Earning Grants in Evening Schools.—I have thought it well to append the following particulars of all the subjects for which payments are made in Evening Schools :—

Reading —Writing —Arithmetic—English—Geography—History —Algebra— Euclid— Mensuration— Mechanics—Animal Physiology — Botany—Agriculture — Horticulture— Chemistry— Sound, Light, and Heat — Magnetism and Electricity — Domestic Economy — Common Things—Navigation—Latin—French—German—Welsh— Shorthand—Book-keeping—Needlework, Cookery, and Drawing.

Prizes.—It is absolutely necessary to give prizes in Evening Schools. These prizes should consist of books or other useful articles, and it is well to give the pupils some choice. Practical experience has proved the value of the following scheme :—

1. A prize of the value of 3s. will be given to those pupils, being over 21 years of age, who make at least 50 attendances during the session.*

2. A prize of the value of 3s. will be given to those pupils, being under 21 years of age, who fulfil the following conditions, viz. : (*a*) Make at least 50 attendances during the session. (*b*) Are present at the examination in the elementary subjects and pass in two subjects. (*c*) Are present at the examination in drawing. (In place of drawing, girls must make at least 20 attendances in the subject of cookery.)

3. A prize of the value of 2s. will be given to those pupils, being under 21 years of age, who make at least 50 attendances during the session, and are present at the examinations.

---

* This prize is to encourage pupils over 21 years of age, who are consequently debarred from Examination.

I have found the following a capital plan for stimulating the attendance at our Night Schools, when it begins to flag after the Christmas holidays. In the early part of February I issue a small handbill, intimating that on such a night in the following week the pupils will have the opportunity of seeing at the schools, say, 10 specimens of prizes in each group. These specimens are laid out by the teachers on the desks on the appointed evening, and a form is supplied to each pupil, who fills in the number of the specimen selected. Of course it is clearly explained to the pupils that the award of a prize does not necessarily, in every case, follow selection. These conditions must be observed. The following is a copy of the slip we use on these occasions:—

MANCHESTER SCHOOL BOARD.

Elementary Evening School,

Department.

Name of Pupil
Age
Address

PRIZES SELECTED.

3s. Prize.	2s. Prize.
*No.	*No.

Pupils Under 21 Years of Age.—A prize of the value of 3s. will be given if the pupil has made at least 50 attendances during the session; is presented for examination in the three R's, and passes in two subjects; and is also presented for examination in drawing. (In place of drawing girls must have made at least 10 attendances of two hours each in the subject of cookery.)

A prize of the value of 2s. will be given if the pupil has made at least 50 attendances during the session and is present at the examinations.

Adults.—Pupils Over 21 Years of Age.—A prize of the value of 3s. will be given if the pupil has made at least 50 attendances during the session. Adults must only mark the 3s. prize.

Each pupil receives only one prize, which will vary in value according to the foregoing regulations.

---

* Insert the number borne by the sample chosen.

The effect of this plan has invariably been to considerably increase the average attendance, not only on the evening when the prizes are selected, but thence onward to the examination. The slips are preserved, and after the examination it is ascertained how many prizes have been gained by the pupils. As soon as possible after the close of the Night School session the prizes are publicly given at meetings held in various parts of the city. These meetings are presided over by Members of the Board, and the evening's proceedings are enlivened by music—vocal and instrumental —as far as possible supplied by the Night School pupils.

In addition to the prizes referred to, we also give certificates to the boys for passing in the standards for drawing, and to all the girls and young women who make the required number of attendances in the cookery classes.

The following is a sample form of certificate for drawing:—

MANCHESTER SCHOOL BOARD.

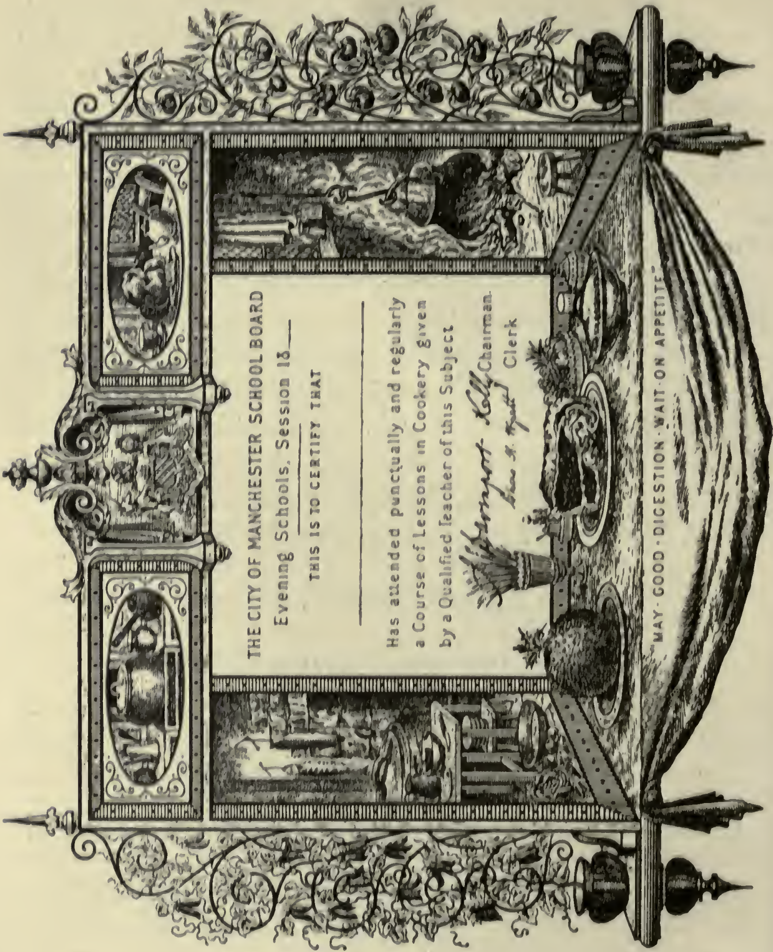
....*Evening School.*

THIS IS TO CERTIFY that in the year 18 .... passed the First Grade Art Examination (Standard), of the Science and Art Department of the Committee of Council on Education, London.

By order of the School Board for the district of the City of Manchester.

....*Chairman.*
....*Clerk.*
....18......

A somewhat more elaborate certificate is the one for cookery. I append a copy of it, about one-fourth the actual size. The certificate was designed by Mr. W. Bridge, principal art master in the employ of the Manchester School Board. The certificate is printed in two colours, on stiff card. It is very highly prized by the pupils.



THE CITY OF MANCHESTER SCHOOL BOARD

Evening Schools, Session 18__

THIS IS TO CERTIFY THAT

____

Has attended punctually and regularly a Course of Lessons in Cookery given by a Qualified Teacher of this Subject

Chairman

Clerk

MAY · GOOD · DIGESTION · WAIT · ON · APPETITE

Examinations.—The New Code allows a Night School to be examined either on 45 meetings or 61. It is certainly most desirable to aim at the higher grant allowed for the larger number of nights. H.M. Inspector of Schools must be advised in writing before the 1st of January in each year, of all Night Schools seeking grants, and he will fix the time of examination. If twenty make the attendances necessary for their names to appear on the schedule, the examination will take place in the building where the school is held. Where a less number are eligible H.M. Inspector has power to group schools for examination. Where drawing is taken the Science and Art Department should be advised at the beginning of the session, and the local inspector will arrange the night of examination. In order to earn the grant for drawing it is necessary that the pupils should not only pass individually but also be present at the subsequent examination in the Code subjects. Attendance at examination should be one of the conditions on which the award of prizes shall depend. Care must be taken that all the subjects for examination appear on the time table of the Night School, which time table should, early in the session, be submitted to H.M. Inspector for approval and signature.

(*a*) No scholar can be presented below the third standard, or who has not attended eight weeks, and made twenty-four attendances.

(*b*) The standards in which pupils are presented need not be the same in all subjects. No scholar can be presented in any subject for the teaching of which provision is not made in the time table of the school.

(*c*) No scholar can be presented in the special subjects alone, or in less than three elementary subjects, unless he has passed Standard V. No scholar presented in any of the elementary subjects may take more special subjects than make his total number of subjects five; and no scholar who is not presented in elementary subjects may take less than two or more than four of the special subjects.

(*d*) No scholar may be presented for examination in any subject in which he has been examined within a year by the Science and Art Department. Every scholar should, as a rule, be advanced one standard, or one stage of a special subject, each year.

No attendance is, as a rule, recognised in an Evening School, for any scholar under fourteen and over twenty-one; but children under fourteen, who are by the Department deemed to be exempt from the legal obligation to attend school, are recognised as scholars in an Evening School.

On the night of examination the manager should be prepared with evidence in all cases of children of school age presented in the Night School, that they have passed the standard for total exemption laid down in the bye-laws of the school authority in whose district such children reside.

Hints on General Management.—How is it that we so frequently hear that in certain districts Night Schools are a failure? Little or no interest is taken by the young people for whose benefit they are established, and the Managers resign themselves to the notion that it is impossible to succeed in the work. Many additional reasons may be given for this by no means uncommon state of affairs, not only in rural districts but also in large centres of population. Very frequently there is a lack of enterprise on the part of the promoters. The Night School is simply organised on old-fashioned lines, the instruction consisting altogether of reading, writing, and arithmetic, taught as in the Day School. Very frequently it is the speculation of the teacher, who has the free use of the rooms granted to him by the Managers, or the school is carried on by teachers who are not properly remunerated for their work. Under any of these conditions it is almost impossible for the Night School to succeed. Public bodies who desire to have successful Night Schools must be prepared to spend money liberally on their maintenance. Experienced and capable teachers must receive adequate remuneration for their services, proper staffs of assistant teachers must be maintained, there must be a sufficient supply of books, apparatus, and stationery, and the schools must not be farmed in any sense of the word. The teachers should be paid their salaries each month, with the exception of any bonus given out of the grant earned by the school, which, of course, can only be paid after the receipt of the grant. The plans of the arrangements for the Night Schools should be carefully drawn up during the summer months and all the engagements of teachers and arrangements completed, so that by the end of August the prospectus may be issued and the schools advertised. This advertising may be done in various ways. The ready assistance of clergymen and ministers should be invoked, in order that handbills may be distributed in Sunday schools, &c.; employers of labour are always ready to allow announcements of the attractions offered by the Night Schools to be hung up in lodges and elsewhere in workshops, factories, and warehouses; a descriptive account should appear, on the eve of the opening of the schools, in the local press, and a liberal supply of placards should appear on the walls; the principal teachers of the public Elementary Schools should, whenever they have also charge of Night Schools, be advised to hunt up all the boys and girls who have left Day School during the year; and, in short, no plan should be neglected of reaching all for whom the Night Schools are intended. During the session there should be a constant visitation of absentees; and, in the case of junior pupils, it is well to draw the parents' attention to lengthened absence from the school. It is well to supply all the Managers and principal teachers of Night Schools in the town with a detailed list showing the attendance and particulars as to fees, &c., of each Night School. This is done each week during the session in Manchester. A postcard is sent from each Night School to the offices of the Board, and from these postcards a return is compiled. The following is a specimen of such a return of attendance, and I cannot too strongly recommend the plan of a similar return being issued in all districts where the promotion of Evening Continuation Schools is seriously taken in hand by School Boards or other Managers:—

ELEMENTARY & COMMERCIAL EVENING SCHOOLS & WOMEN'S INSTITUTES.

Return of Attendance—Week ended October 3rd, 1891.

ELEMENTARY EVENING SCHOOLS.

SCHOOL.	Dept.	Average.	Actual.	On Books.	Fees Received.		
					£	s.	d.
Abbott Street	M	142	166	211	2	7	9
,,	F	102	108	137	0	19	0
Albert Memorial	M	65	73	91	0	12	7
All Saints' (Gorton)	M	58	60	67	0	10	9
,, ,,	F	89	94	118	0	16	6
Armitage Street	M	73	82	100	0	17	7
Bangor Street	M	235	261	320	5	5	11
,,	F	170	187	234	2	15	0
Blackley Wesleyan	M	41	51	55	0	9	1
,,	F	21	25	27	0	4	9
Cavendish	M	104	110	128	0	19	8
Chester Street	M	85	94	125	0	16	1
,,	F	63	68	83	0	12	0
Clarendon Road	M	69	69	92	0	11	8
,,	F	47	50	50	0	9	9
Embden Street	M	86	90	116	0	15	0
Every Street	M	292	315	372	3	12	6
,,	F	175	191	226	1	11	9
Gill Street	M	54	59	75	0	10	11
,,	F	33	36	39	0	6	4
Granby Row	M	89	92	130	0	15	9
,,	F	56	60	80	0	10	10
Lees Street	M	51	57	61	0	9	9
,,	F	35	41	46	0	8	0
Lloyd Street	M	98	106	132	0	18	6
,,	F	132	143	166	1	8	1
Mulberry Street	M	51	57	62	0	14	6
,,	F	137	150	166	1	18	1
Pottery Lane	M	25	26	35	0	4	2
,,	F	16	18	28	0	3	2
Queen Street	M	75	84	117	0	17	0
,,	F	90	96	109	0	15	8
Ross Place	M	101	114	132	1	0	3
,,	F	100	107	132	0	19	1
St. Andrew's (Ancoats)	M	15	18	31	0	3	2
,, ,,	F	20	25	37	0	4	2
St. Anne's (Newton Heath)	M	96	107	133	1	4	4
,, ,,	F	95	113	135	1	0	1
St. Anne's (D'sgate) Deaf and Dumb ,, ,, ,,	M F	18	20	21	0	9	9
St. Barnabas (Openshaw)	M	39	41	46	0	6	10
,, ,,	F	39	45	49	0	7	10
St. Clement's (Gorton)	M	36	37	54	0	6	3
,, ,,	F	29	33	53	0	5	9
St. James's (Collyhurst)	M	46	50	59	0	11	3
St. John's (Miles Platting)	M	114	118	157	1	2	3
,, ,,	F	103	106	125	0	17	9
St. Jude's	M	39	44	56	0	8	1
,,	F	18	20	23	0	3	5
St. Luke's (Newton Heath)	M	46	51	60	0	8	11
,, ,,	F	52	55	59	0	9	7
St. Mark's (Gorton)	M	35	37	43	0	6	4
,, ,,	F	31	32	39	0	5	2
St. Mark's (Holland Street)	M	49	52	65	0	15	5
,, ,,	F	29	33	40	0	5	8
St. Mary's (Moston)	M	12	13	14	0	1	10
,, ,,	F	19	22	25	0	3	11
St. Matthew's (Deansgate)	M	51	56	71	0	9	10
,, ,,	F	53	59	71	0	10	0
St. Michael's (Hulme)	M	60	69	84	0	10	4
,, ,,	F	26	27	34	0	5	1
St. Philip's (Hulme)	M	57	61	73	0	10	1
,, ,,	F	48	56	60	0	9	9
St. Stephen's (C.-on-M.)	M	26	31	41	0	5	1
,, ,,	F	23	25	32	0	4	5
Smedley Road	M	126	141	172	2	10	1
,,	F	114	126	145	1	1	11
Southall Street	M	121	137	154	1	4	6
,,	F	99	116	140	1	1	9
Johnson Street	M	67	75	86	0	14	6
Totals		4,911	5.391	6,549	56	12	6

COMMERCIAL EVENING SCHOOLS.

SCHOOL.	Dept.	Average.	Actual.	On Books.	Fees Received.		
					£	s.	d.
Central	M	805	837	898	53	8	6
,,	F						
Ducie Avenue	M	139	157	187	0	19	2
,,	F	118	141	169	4	16	2
Johnson Street	M	69	78	98	1	17	2
,,	F	26	29	36	0	16	0
Miles Platting	M	44	49	64	0	18	2
,,	F	22	28	35	1	1	0
Roby	M	159	165	171	6	11	6
,,	F						
St. George's	M	67	75	82	2	19	0
,,	F	58	63	77	2	8	8
St. Matthew's (Ardwick)	M	200	219	254	6	5	10
,, ,,	F	124	149	174	3	9	2
Upper Jackson Street	M	171	185	211	3	16	8
Waterloo Road	M	212	246	281	5	14	0
,,	F						
Smedley Road (Shorthand)		54	54	54	0	10	0
Totals		2,268	2,475	2,791	95	11	0

WOMEN'S INSTITUTES.

SCHOOL.	Dept.	Average.	Actual.	On Books.	Fees Received.		
					£	s.	d.
Armitage Street	F	80	105	146	1	16	8
Birley Street	F	76	108	157	2	2	4
Burgess Street	F	85	133	168	3	19	0
Upper Jackson Street	F	93	162	190	6	1	8
Totals		334	508	661	13	19	8

SUMMARY.

	Average.	Actual.	On Books.	Fees Received.		
				£	s.	d.
WOMEN'S INSTITUTES	334	508	661	13	19	8
COMMERCIAL EVENING SCHOOLS	2,268	2,475	2,791	95	11	0
ELEMENTARY EVENING SCHOOLS	4,911	5,391	6,549	56	12	6
	7,513	8,374	10,001	166	3	2

COMPARATIVE STATEMENT.

	Average.	Actual.	On Books.	Fees Received.		
				£	s.	d.
Return for week ended October 3rd, 1891	7,513	8,374	10,001	166	3	2
Corresponding week last year	7,091	7,860	9,584	110	5	7
Increase	422	514	417	55	17	7
Decrease	—	—	—		—	

The form may be printed with the names of the schools, and the figures filled in each week, and by means of a multiplying process, such as the Hektograph, sufficient copies can very speedily be made.

Constant visitation of the Night Schools by the managers is an important duty which should not be neglected. Both pupils and teachers appreciate such visits. The registers should be regularly checked.

Fees.—In some school districts the Night Schools have recently been made free. This has been the case in Birmingham. Another plan is to charge a small fee, which is returned at the end of the session to pupils making a certain number of attendances and passing the examination.

In Manchester the ordinary fees charged are 2d. or 3d. per week, or a sessional fee of 2s. 6d. or 3s. 6d. The smaller fee is charged to pupils under eighteen years of age. A variable fee has its disadvantages, and probably where a charge is made it is better to make it uniform, pupils being encouraged to pay the sessional fee when the Night Schools open in September. The fee should cover the use of books, apparatus, and stationery, an exception, if any, only being made in the case of books required for home use. Where a fee is charged the payment should be strictly enforced, provision being made for remission in cases of absolute necessity.

Code Requirements, &c.—The rules already set forth under the head of Examinations must be strictly complied with, and the necessary particulars required in Form IX. of the Education Department be ready on the night of examination. I have appended (pp. 43-53) the Minute of the 31st May, 1892, issued by the Education Department for Evening Schools. This Minute, when it comes into force, will simplify the rules of Examination, &c., given in the New Code of 1892, and also alter slightly the mode of assessing the grants. By rendering separate accounts of the Night School the report will be forwarded to the managers shortly after April 30 in each year, and the grant paid. This is a preferable arrangement to rendering the accounts with those for the Day School in connection with which the Evening School may be conducted. The following is an extract from Instructions to H.M. Inspectors relating to Evening Schools (28 March, 1890): "The provisions relating to Evening Schools have been materially altered, with a view to encourage more advanced and varied teaching in such schools, and to enable managers to adapt the course of study to the industrial and other requirements of particular districts. Art. 106 removes the condition which has hitherto obliged all evening scholars to be presented in the three elementary subjects; and permits those who are certified to have passed the examination in the Fifth Standard to be presented in any four special (class or specific) subjects which the managers may select. The requirement that the first of such special subjects shall always be English, and the second geography or elementary science, is also withdrawn; and the freedom of choice offered by means of the alternative courses and other provisions applicable to special subjects in Day Schools is also fully available to the conductors of Evening Schools. By these means it is hoped that managers will be encouraged to frame in various districts such courses of instruction as are most likely to attract young people, and to induce them to continue their studies beyond the ordinary school age. My Lords regard with great interest the numerous experiments which are being tried in various parts of the country to increase the efficiency of the Evening and Continuation Schools; and you will report to them from time to time the results of any such experiments. The managers should, as heretofore, take reasonable pains to procure evidence at each scholar's admission of the standard in which he has previously been presented and passed."

Teachers.—Where a Night School is conducted in premises used for Day School purposes it is desirable to appoint the principal teacher of the Day School to the charge of the Evening School, where such an arrangement is possible. The books, apparatus, &c., of the Day School can be employed. Any possible friction between the two schools is rendered impossible, and the undoubted influence of the principal teacher in inducing children who have passed out of the Day School to join the Evening Classes is best secured. The same rule is also true regarding the assistants. The Code states that any person over eighteen years of age, who is approved by H.M. Inspector, may be employed as a teacher in an Evening School, whether certificated or not. Experience proves that the teachers employed in public Elementary Day Schools are the best teachers for Evening Schools. In such subjects as shorthand, cookery, dress-making, &c., it may sometimes be necessary to employ visiting teachers, but for these it is well, if possible, to secure the services of public elementary school teachers who are able to take the extra subjects. It will be found extremely beneficial to have occasional conferences of the whole of the principal teachers of the Night Schools conducted by the same board or managers. Mutual help will remove many difficulties, and cordial co-operation between managers and teachers will be found of great value.

Grants.—The grants to be earned are of two kinds:—

I. A fixed grant of 4s. or 6s. for each pupil in average attendance, according as the school has been open forty-five or sixty-one times since the last examination. Schools may easily earn the higher grant by meeting three times per week from the middle of September to March. The meetings must last at least one hour. If the Night School is held from 7 to 9 p.m. (the best time), the registers are marked at 8 p.m. The registers must be closed an hour before the end of the meeting, and no religious instruction can be given within the period set apart in the time table for secular subjects.

II. A grant on the examination of individual scholars, in any of the elementary or special subjects, of 2s. for each one reported to have passed. This grant is not calculated on average attendance, but on individual passes. The subjects that may be taken are—Reading, Writing, Arithmetic, English, Geography, History, Needlework, Algebra, Euclid, Mensuration, Mechanics, Chemistry, Animal Physiology, Botany, Principles of Agriculture, Principles of Horticulture, Sound, Light and Heat, Magnetism and Electricity, Lessons on Common Things, Latin, French, German, Welsh (in Wales), Bookkeeping, Shorthand, Navigation, Domestic Economy, Cookery, Drawing, or any other subject, if sanctioned by the Education Department and approved by H.M. Inspector.* (In the case of drawing, arrangements must be made with the Science and Art Department.)

The following illustration of the amount of grant earned in an Evening Continuation School in Manchester may be useful and serve as a guide to the amount of grant obtainable:—

Government Grant earned by an Evening Continuation School with 118 pupils in average attendance.

Fixed grant on average attendance			118 at 6s.	£35	8	0
Passes in elementary subjects			265 at 2s.	26	10	0
„	Special subjects, Geography		15 at 2s.	1	10	0
„	„	Elementary Science and Shorthand	14 at 2s.	1	8	0
„	„	Drawing	19 at 2s.	1	18	0
„	„	Needlework	67 at 2s.	6	14	0
„	„	Cookery	71 at 2s.	7	2	0
				£80	10	0

Average earnings, 13s. 7d. per head.

Balance Sheet.—The following is a balance-sheet of an Elementary Evening School conducted in Manchester during the Session of 1890-91. The school was worked in two departments (boys and girls), and the average attendance of pupils earning grant was 295. In addition there was an average attendance during the session of 21 pupils over 21 years of age who, according to the present rules of the Education Department, were not eligible to earn grants, the total number enrolled in this school being 570 pupils.

---

* Note.—The Minute of 31st May, 1891, will, when it comes into force, give a grant of 2s. or 1s. 3d. for *each scholar presented.*

Account of the Income and Expenditure of Bangor Street Evening Board School for the Session of 1890-91, *showing the Amounts Actually Received and Actually Disbursed during the Year.*

INCOME.	£	s.	d.	TOTAL. £	s.	d.	EXPENDITURE.	£	s.	d.	TOTAL. £	s.	d.
To Grant from Committee of Council on Education				195	18	0	By Salaries of Teachers				218	7	1
,, School Fees Paid by Scholars				85	11	10	,, Books, Apparatus, and Stationery				19	0	8
,, Amount Received for Books and other Articles Sold to Pupils				0	15	4	,, Fuel, Light, and Cleaning				10	0	0
,, Income arising from other Sources, viz.:							,, Replacement of Furniture and Repairs to Building and Furniture				1	8	11
From Department of Science and Art	11	2	0				,, Other Expenses, viz.:						
,, Cookery Dishes Sold	4	14	9				On Account of Prizes	23	1	11			
				15	16	9	Cookery Materials	3	15	5			
							Police Services...........................	0	16	6			
											27	13	10
							,, Balance				21	11	5
Total..............................				£298	1	11	Total				£298	1	11

The following is the minute of the 31st May, 1892, establishing a Code for Evening Schools. The Code had not become law at the date of the issue of the Manual (Sept., 1892).

EVENING SCHOOL CODE.

1. The conditions of annual grants laid down in Articles 3, 4, 8, 9, 19, 21, 23, 24, 65, 66, 67, 76-79, 81, 85 (*a*), (*d*), 87-90, 92, 93, 107 apply to Evening Schools as well as to Day Schools. Of these Articles it is particularly necessary for Managers of Evening Schools to bear in mind Articles 3, 4, 8, 9, 77, 78, 81, 85 (*d*), 88, 89.

2. The expressions "Inspector," "Managers," "Correspondent," "Average Attendance," "Elementary, Class and Specific Subjects," "Certificated Teacher," "Pupil Teacher," have the same meaning as in the body of the Code.

3. (*a*) "An attendance" means attendance at secular instruction during one hour. (*b*) A scholar may make two attendances, but no more, on one and the same evening. He may not make more than four attendances in the same week. Wherever a scholar is reckoned as having made two attendances on the same evening, the meeting at which he has made them shall be reckoned as two meetings in calculating the average attendance. (*c*) The class registers must be marked and finally closed before the minimum time constituting an attendance begins. If any scholar entered in the register as attending is withdrawn from school before the time constituting an attendance is complete, the entry of attendance should be at once cancelled. (*d*) In making up the minimum time constituting an attendance there may be reckoned time occupied by instruction in any of the following subjects, whether or not it is given in the school premises or by the ordinary teachers of the school, provided that special and appropriate provision approved by the Inspector is made for such instruction, and the times for giving it are entered in the approved time table: Drawing, manual instruction, science, suitable physical exercises, military drill (for boys), practical cookery or laundry work or needlework (for girls). (*e*) No attendance is, as a rule, recognised in an Evening School for any scholar under fourteen or over twenty-one years of age, but children under fourteen who are by the Department deemed to be exempt from the legal obligation to attend school are recognised as scholars in an Evening School.

4. In Evening Schools the school year ends on the 30th of April.

5. The managers of any school to which annual inspection has already been promised may apply in writing, before the 1st of January, to the Inspector for an examination of their evening scholars. The application must be renewed annually before the 1st of January to the Inspector, and not to the Department. The number to be presented must be stated in the managers' annual application to the Inspector.

6. Only one such examination is held each year in any school, and it may be held on any day, between the 1st of January and 30th of April, that may be arranged with the Inspector, provided that the school has met 45 hours since the date of the last examination.

7. The Inspector may make arrangements for the collective examination, at some convenient centre, of the evening scholars of several schools.

8. The Inspector may either hold the examination himself or entrust it to an assistant approved by the Department.

9. The Inspector will not, as a rule, visit any Evening School for inspection unless 20 scholars are to be presented for examination. If less than 20 scholars are to be presented, they may be examined either at a collective examination, together with the evening scholars of other schools, or at the same time with the day scholars of any school, or their examination may be conducted by the Managers or other responsible persons in accordance with the regulations from time to time prescribed by the Department. In the latter case, the examination will be held on the third Tuesday in March, and Managers desiring to hold such an examination must give one calendar month's notice to the Department.

10. Pupil teachers may not be apprenticed (or recognised as teachers) in Evening schools.

11. Any other person over eighteen years of age approved by the Inspector may be recognised as teacher of an Evening School.

12. The teachers of Evening Schools need not be lay persons.

13. In order that an Evening School may receive an annual grant—(*a*) The principal teacher must be certificated or recognised under Article 11, and must not be allowed to undertake duties not connected with the school which may occupy any part whatever of the school hours. (*b*) The school must have met not less than forty-five hours in the school year. (If a school has been closed during

the year under medical authority, or for any unavoidable cause, a corresponding reduction is made from the number of meetings required by this Article.) (*c*) The school must have been visited and reported on by the Inspector, or examined in accordance with Article 9, unless the prevalence of epidemic sickness, or other cause accepted as satisfactory by the Department, prevent such visit or examination. (*d*) The school must be efficient. A school is regarded as satisfying this Article if it obtains the lowest grant under Article 17 (*b*) for at least two subjects. The grant will not be withheld under this Article until the school has failed to obtain such grant a second time after warning in the previous year.

14. The annual grant becomes due at the end of the school year, and is paid as soon as may be after that date.

15. The annual grant is made up of the several grants which, with their amounts, are enumerated in the following Articles :—

16. The Grants made to Evening Schools are as follows: (*a*) A fixed Grant for each unit of average attendance of (i.) 4s. if the school has met not less than 45 nor more than 60 hours since the last examination. (ii.) 6s. if the school has met not less than 61 hours since the last examination. A fraction of a unit, if it reaches ·5, may be counted as an additional unit. (*b*) A Grant on examination in any of the elementary or special (*i.e.*, class or specific) subjects of 2s. or 1s. 3d. for each scholar presented. The Department shall decide which, if either, of these sums shall be paid for each subject, after considering the report of the Inspector, or the results of the examination, in regard to the accuracy of knowledge and general intelligence of the scholars in such subject. (i.) No scholar may be presented for examination in any subject who has not attended the school at least once a week for ten weeks and received at least 20 hours' instruction in that subject. Every such scholar must be presented, unless there is a reasonable excuse for his absence from the examination. (ii.) The year's work in which scholars are presented need not be the same for all subjects. (iii.) No scholar may be presented for examination in the special subjects alone, or in less than two elementary subjects, unless such scholar at the time of presentation produces a certificate that, having been a scholar in a Public Elementary School, he has passed in a Day School in Standard V. or in an Evening School in fourth year's work in the elementary subjects. (iv.) No scholar who is presented for examination in any of the elemen-

tary subjects may be presented in more of the special subjects than will make the total number of subjects amount to five; and no scholar who is not presented for examination in elementary subjects may be presented in less than two or more than four of the special subjects. (v.) No scholar may be presented for examination in any subject in which he has been examined within a year by the Department of Science and Art. (vi.) Every scholar should, as a rule, be advanced not less than one year's work in a year. All exceptions should be specially notified and explained to the Inspector, who will determine whether the explanation justifies the exception. (vii.) The Time Table of an Evening School must show the several subjects in which at least 20 hours' instruction has been given. (*c*) Where the Inspector reports that special and appropriate provision is made for the practical teaching of Cookery by a teacher holding a certificate from some Training School of Cookery recognised by the Department, a grant of 2s. is made on account of each girl (presented for examination in the elementary subjects in Standard IV. or any higher Standard or in the special subjects alone) who has attended not less than 20 hours during the school year (of which not more than four hours may be in any one week) at a Cookery Class of not more than 24 scholars, and has spent not less than 10 hours in cooking with her own hands. The time for Cookery should be entered in the Time Table, and should not be less than a continuous hour at any meeting, provided that, for the purposes of Article 17 (*b*) iv., Cookery shall be considered as a special subject. (i) Where the Inspector reported before the 1st of May, 1885, that special and appropriate provision was made for the practical teaching of Cookery in a school by any teacher, the grant for cookery shall not be refused on the ground that such teacher does not hold a certificate from some recognised Training School of Cookery. (ii.) Where the Inspector reports that there is no convenient means of obtaining a certificate, the certificate above mentioned shall not be required, but the competency of the teacher must be proved to the satisfaction of the Department. (iii.) For the purpose of demonstration, not more than three classes of 24 scholars may be present, provided the Inspector reports that the number present may be conveniently accommodated. But for the 10 hours required for cooking with their own hands (during which time no demonstration lesson can be given) not more than 24 scholars shall be taught at the same time by one teacher.

SCHEDULE.—SUBJECTS FOR EVENING SCHOOLS.

Managers are not restricted to the use of any of the schemes given in this schedule. They may, if they desire to do so, prepare for the sanction of the Inspector a scheme providing a syllabus of not less than 20 lessons of one hour's length on any one of these subjects, or on any other subject sanctioned by the Department. Such scheme must be submitted to and approved by the Inspector at the beginning of the Session.

N.B.—The stages of such of these subjects as admit of being so treated may be taken in any order; two or more stages may be taken in one year in less full detail than if one only were taken.

The Inspector may any year examine scholars, in addition to the work of the year then taken, in that of any year previously taken.

LIBRARY OF THE UNIVERSITY OF CALIFORNIA.

SCHEDULE—SUBJECTS FOR EVENING SCHOOLS. Minute of 31st May, 1892.

Subject.	First Year.	Second Year.	Third Year.	Fourth Year.	Fifth Year	Sixth Year.	Seventh Year.
READING	A passage from a reading book	A passage from a reading book	A passage from a History of Eng-England	A passage from newspaper	A passage from a standard author.	A passage from Shakespeare's Julius Cæsar.	A passage from Milton's Paradise Lost.
WRITING	Eight lines of prose	Eight lines of poetry	Writing from memory the substance of a short story read out twice	A short letter on an easy subject.	A short theme on an easy subject.	A theme or letter.	Correction of mistakes in Composition.
ARITHMETIC	Compound rules —money	Compound rules—weights and measures (weight, length, capacity, and time).	Vulgar fractions with their application	Decimal fractions with their application	Practice and bills of parcels	Simple proportion and simple interest	Averages and percentages; calculations required for carpeting and papering rooms.
ENGLISH (Course i.).	Easy parsing.	Full parsing	Easy analysis	Parsing and analysis of simple sentences	Parsing and analysis of a short complex sentence	Analysis of sentences; methods of forming English nouns, verbs, and adjectives from each other	Analysis of sentences. Most common prefixes and terminations.
ENGLISH (Course ii.).	Modifications of subject, object, and predicate.	Easy analysis	Easy parsing	Parsing and analysis of simple sentences	Parsing and analysis of a short complex sentence	Analysis of sentences. Short paraphrase	Analysis of sentences. Paraphrase of simple poetical extracts.
GEOGRAPHY	British Isles	Canada, United States	Australasia	British Empire	Europe	Asia and Africa	America and the Oceans.
HISTORY (20 stories and biographies from selected periods of English History).	800 to 1215	1215 to 1485	1485 to 1688	1688 to 1760	1760 to 1837	Reign of Queen Victoria	The history of the British colonies.

Subject.	First Year.	Second Year.	Third Year.	Fourth Year.	Fifth Year.	Sixth Year.	Seventh Year.
GEOGRAPHY and HISTORY combined (the locality and historical association of 20 places selected from)..........	Early English history	The chief towns and cities of England	The chief towns and cities of Europe	The chief towns and cities of Asia	The chief towns and cities of America	The chief towns and cities of Africa and Australasia	The decisive battlefields of the world,
ALGEBRA	Notation, addition, and subtraction	The same, with multiplication and division...	The same, with G.C.M. and L.C.M.	The same, with easy simple equations, involving one unknown quantity, and easy problems which lead to them.	The same, with simple equations involving two unknown quantities and easy problems which lead to them.	The same, with easy quadratic equations and easy problems which lead to them.	The same, with square root and cube root.
EUCLID	Book I. to Prop. 15, inclusive..	Book I. to Prop. 26, inclusive....	Book I. to Prop. 41, inclusive....	Book I.	Books I. and II...	Books I., II., III., to Prop. 17.	Books I., II., III.
MENSURATION ..	Triangles and rectangles....	The same with parallelograms..	The same, with the circle and quadrilateral figures	The same with parallelopiped and sphere	The same, with the right cone and cylinder ..	Use of the chain and field-book in land surveying..	Duodecimals. Measuring brickwork and timber ......
MECHANICS	Matter in three states: solids, liquids, and gases.	The mechanical properties peculiar to the three states of matter	Matter is porous, compressible, and elastic. Measurement as practised by the mechanic	Measures of length, time, velocity, and space	Matter in motion; the weight of a body, its inertia and momentum.	The lever; the wheel and axle; pulleys; the inclined plane; the wedge; the screw	The parallelogram of velocities. The parallelogram of forces. Examples commonly met with illustrating the mechanical powers ......
ANIMAL PHYSIOLOGY	The build of the human body..	The heart and lungs; their position	The other chief internal organs of the human body; their position........	The properties of muscle. The mechanism of the principal movements of the limbs	The mechanism of the body as a whole. Alimentation..........	Circulation and respiration	The general arrangement of the nervous system.

Subject.	First Year.	Second Year.	Third Year.	Fourth Year.	Fifth Year.	Sixth Year.	Seventh Year.
BOTANY	Characters of the roots of plants, illustrated by common flowering plants..	Characters of the stem and leaves of a plant, illustrated by common flowering plants..........	Characters of the parts of a flower, illustrated by common flowering plants......	The formation of different kinds of fruit-cells and vessels	Functions of the root, leaves, and different parts of the flower ..	Food of plants, and manner in which a plant grows	The characters of the larger groups and most important families of flowering plants. The comparison of a fern and a moss with a flowering plant ....
PRINCIPLES OF AGRICULTURE.	Nature of soils..	The supply of plant food in the soil.	The necessity for cultivation, and the circumstances making tillage more or less effective ..	The principles regulating the more or less perfect supply of plant food.	Manures as supplemental sources of plant food	The principles regulating the growth of crops.	The principles regulating the variation of crops. Insect pests ....
PRINCIPLES OF HORTICULTURE	Seeds, nature of, and germination. Soils, nature and composition.	Roots, nature and functions. Stems and branches	Leaves, buds, and tubers. Flowers. Fruit	Common implements. Operations connected with the land. Digging, trenching, hoeing, draining, watering.	Seed bed. Rolling and raking, sowing, transplanting, thinning. Potting, planting, staking....	Budding. Grafting. Layering. Branch and root pruning........	Fruit and flower culture, open air and under glass. Vegetable culture. Insect and fungus pests.
CHEMISTRY	Properties of oxygen and hydrogen	Properties of other common gases..	The chemical character and constituents of pure air, and the nature of the impurities sometimes found in it	The chemical character and constituents of pure water, and the nature of the impurities sometimes found in it..............	The properties of carbon and its chief inorganic compounds. Non-metallic bodies	Metallic bodies; combination by weight and volume	The use of symbols and chemical formulæ ..
SOUND, LIGHT, AND HEAT	The three modes in which heat may be conveyed from place to place.	Effects of heat on solids, liquids, and gases......	Expansion by heat. The thermometer. Other examples of expansion commonly met with	Propagation of light. Intensity. Shadows. Reflection. Mirrors	Refraction lenses. Elementary explanation of the microscope, camera obscura, magic lantern..	Reflecting and refracting telescope. Propagation of sound..	Elementary notions of vibrations and waves. Reflection of sound, echoes........

Subject.	First Year.	Second Year.	Third Year.	Fourth Year.	Fifth Year.	Sixth Year.	Seventh Year.
MAGNETISM AND ELECTRICITY ..	Attraction, repulsion, and polarity as illustrated by the magnet...	Mariner's compass. Attraction of light bodies by rubbed sealing wax and glass	Experimental proof that there are two forms of electricity — attraction and repulsion	Gold-leaf electroscope. Construction of electrophorus	Construction of electrical machine and Leyden jar, Voltaic battery, and notions of a current.........	Magnetic effect of a current. Galvanometer. Electro magnets. Terrestrial magnetism	Chemical effect of a current. Electrolysis. Induced currents. The electric telegraph........
DOMESTIC ECONOMY......	Chief materials used in clothing..........	Chief materials used in washing.	Food: its composition. Clothing.	Foods and beverages: their properties and nutritive value and functions	Food: its preparation and culinary treatment generally. The skin and personal cleanliness	The dwelling: warming, ventilation, and cleaning	Rules for health. Common ailments and their remedies Management of a sick room.
LESSONS ON COMMON THINGS	Some common inorganic substances and their properties..........	Simple mechanical laws in their application to common life and industries......	Pressures of liquids and gases: their application to common life and industries.	Some simple chemical laws in their application to common life and industries.	Outlines of physiology in its bearing on health and work	Familiar illustrations of applied Science, *e.g.*, the dwelling; fabrics and clothing; the common pump..........	Familiar illustrations of applied Science, *e.g.*, food; warming; lighting......
NAVIGATION....	Definitions and explanation of terms used in mathematical geography. Construction and use of charts........	The compass. Conversion of magnetic into true bearings and the reverse	Recapitulation. Plane sailing. Traverse sailing.	The log. Day's work. Mercator's sailing	Latitude by meridian observation. Explanation of method of determining the error of the compass by an amplitude of the longitude by the chronometer ..	Deviation of the compass. Description and use of the sextant..	Recapitulation of the foregoing ....
LANGUAGES: LATIN, FRENCH, GERMAN (fair correctness of pronunciation to be required)..	Grammar of the noun and adjective	Grammar to end of regular verbs.	Grammar to end of irregular verbs	Grammar and translation into English of easy narrative sentences	Grammar. Translation of easy conversational sentences in familiar words from English ..	Grammar. Knowledge of some easy book.	Grammar, with easy composition ....
					Latin.—Cæsar. De bello Gallico, Book I. *French.*—La jeune Siberienne. *German.*—Hauff, Die Karavane.		

Subject.	First Year.	Second Year.	Third Year.	Fourth Year.	Fifth Year.	Sixth Year.	Seventh Year.
WELSH. N.B.—The matter prepared for translation must be different in the several years; and the scholars may be required to give written as well as oral answers to all questions (including those set in translation.)	1. (*a*) Nouns and adjectives with their inflexions (number and gender). (*b*.) Conjugation of the verb "bod" in the inflexional form only.... 2. To translate from Welsh into English, and from English into Welsh, easy conversational sentences containing the verb "bod," and the periphrastic form of other common verbs.	1. (*a*) The personal pronoun. (*b*) Conjugation of the verb "bod," including the impersonal form 2. To translate and write from dictation a short passage from an easy Welsh book (15 pages to be prepared).	1. (*a*) Conjugation of the active (inflexional and periphrastic with "bod") and passive of the regular verb "dysgu." (*b*.) The pronouns, adverbs, and simple prepositions........... 2. To translate from Welsh into English, and from English into Welsh, easy conversational sentences containing the verbs "bod" and "dysgu," and any other common verbs.	1. The chief rules for the mutation of initial consonants. 2. Parse a simple Welsh sentence (Welsh or English terms may be used). 3. To translate and write from dictation a short passage from a Welsh book, approved by H.M. Inspector (15 pages to be prepared.)	1. Conjugation of irregular verbs, conjunctions, compound and pro-nominal prepositions. 2. Parse a complex Welsh sentence. 3. Translate and write from dictation a short passage from a a Welsh book, approved by H.M. Inspector (15 pages to be prepared).	1. (*a*) A knowledge of the chief prefixes and affixes in Welsh words. (*b*.) Answer questions on Welsh accidence 2. Write a short essay on a familiar subject.	1. Answer questions on Welsh syntax. 2. To translate and write from dictation a short passage from a Welsh book approved by H.M. Inspector (15 pages to be prepared. 3. Recite 40 lines of Welsh poetry with knowledge of meaning and allusions.
SHORTHAND—(accuracy will be specially considered throughout the stages). The shorthand notes to be subsequently transcribed or read	To write from slow dictation (at the rate of at least ten words a minute) a passage from a first reader not used in the school........	To write from slow dictation (at the rate of at least 20 words a minute) a passage from a second reader not used in the school, or from some book of equal difficulty	Dictation to be at the rate of at least 30 words a minute from a Fourth Standard reader not used in the school, or from some book of equal difficulty	Dictation to be at the rate of at least 50 words a minute, from any ordinary book. Some examples of phrases will be required in this and the following stages	Dictation to be at the rate of at least 60 words a minute from a newspaper	To take down an original speech delivered with some deliberation............	To take down an original speech delivered with greater rapidity. ....

Subject.	First Year.	Second Year.	Third Year.	Fourth Year.	Fifth Year.	Sixth Year.	Seventh Year.
BOOK-KEEPING..	Explanation of ordinary commercial terms. Cash book....	Cash book, purchases book, sales book	Double entry; its advantage. Personal and other accounts	Bills of exchange. The journal; its intention and uses	Record by double entry. Ledger accounts	Bad debts. Discounts. The journal. Journalising ..	To construct a journal. To post into ledger. To arrange a trial balance. To close ledger by preparing profit and loss account and balance sheet
NEEDLEWORK (girls)	Hemming, seaming, stitching, and pleating; any garment showing these stitches; knitting, 4 needles, plain and purled, *e.g.*, cuffs	As before; sewing on strings; garment showing these stitches; herring-boning on canvas and flannel; darning on canvas and on stocking-web material as for thin places; knitting a sock.	As before; sewing on a button; button-holing, gathering, setting-in; a garment showing these stitches; plain darning a hole in stocking-web material; patching on flannel and calico; knitting a child's stocking	As before; tuck running, gusset making, patching on print; cutting out simple garments (pinafore, chemise); knitting (a sock or stocking, ribbed and plain).	As before; a garment showing these stitches; whipping and setting in frills; darning on coarse linen; cutting out a plain shirt or nightgown, and an infant's frock bodice	As before; a garment in print muslin or woollen material (child's frock or girl's blouse); cutting out a girl's bodice (with long sleeves and plain skirt); marking on canvas and linen	As before, with greater skill; cutting out and making up a dress bodice to fit the worker; sewing on hooks and eyes, making eyelet holes; overcasting seams........

CHAPTER III.

ADVANCED EVENING SCHOOLS.

COMMERCIAL.

I NOW proceed to deal with Evening Schools of an advanced grade—schools eligible for assistance under the Technical Instruction Acts—and also which it may, to a certain extent, be found beneficial to place under Government inspection. For the purposes of commercial education, it is of great importance that higher instruction should be given in those subjects which pertain especially to modern business.

In order to meet this need we have now successfully carried on in Manchester for some years schools which we call "Commercial Evening Schools."

The scheme of these schools is thus described in the syllabus issued by the School Board in September, 1891:—

The Commercial Evening School.—The object of the Commercial Evening School is to provide Technical Instruction in those subjects which meet the requirements of modern business. Sir Philip Magnus, member of the late Royal Commission on Technical Instruction, in his work on "Industrial Education," states "that the organisation in all large towns of evening classes, with a well-arranged programme of studies, is a necessary part of any system of commercial education." If our clerks are to hold their own against the competition of foreign rivals, opportunities must be afforded them of making up by evening instruction the deficiencies of their early education.

In Germany and France there are special schools for commercial training. In these countries it is fully recognised that the course of study in the training for commercial pursuits must differ from the instruction necessary for the learned professions or for a career of scholarship.

These schools will be continued upon the lines of the Commercial Evening Schools conducted by the Board during last session, which were very largely attended. At the Examinations conducted by the Society of Arts in 1891 the Board's pupils who passed far outnumbered those of any other institution in the kingdom.

On the establishment by the Board of the Commercial Evening School in 1889, the following resolution was passed by the Manchester Chamber of Commerce:—

> *Resolved*—"That the Board of Directors of the Manchester Chamber of Commerce learn with much satisfaction of the establishment by the Manchester School Board of Evening Classes for the study of commercial subjects; and that the circular received from the School Board announcing the fact be published in the report of this day's proceedings of the directors."

The Manchester Chamber of Commerce, as will be seen from the foregoing resolution, recognise the importance of providing means for improved commercial training, and have recently drawn up a scheme of examinations for the award of certificates.

Cambridge has taken the lead of the Universities in acknowledging the necessity for giving commercial education special recognition. The Syndicate of the University, on February 22nd, 1888, drew up a scheme for examinations for commercial certificates specially designed for secondary schools.

This shows the amount of public attention which is now being paid to the necessity for providing suitable instruction for those who intend to devote themselves to commercial pursuits.

Scheme of Instruction.—The Commercial Evening Schools are established to provide a complete and connected course of instruction in the subjects requisite for candidates desirous of obtaining positions of trust and responsibility in the counting-house, warehouse, bank, or office, either as clerks, cashiers, and bookkeepers, or as general and foreign correspondents. The course of instruction in the Commercial Evening Schools will also prepare for the civil service, the accountants' and actuaries' examinations, and for the commercial certificate of the Victoria University.

One main object of the Commercial Evening Schools is that they shall serve as Continuation Schools for scholars leaving Elementary and Secondary Day Schools, in order specially to fit such scholars for commercial employment.

The course of instruction is of a practical character; for instance, a junior may be instructed to answer or press copy a letter, or furnish a statement of account of sales; a senior may have to take down in shorthand matter for transcription on the typewriter or for translation into French, German, or Spanish, or present and report upon a profit and loss account and balance-sheet.

The head masters will exercise a constant supervision over the classes, and will be acquainted with the progress of each student. They will be pleased to furnish reports on the attainments of pupils.

In order to suit the requirements of pupils, it is expected that junior and senior divisions in most of the subjects will be arranged—the former including students under 18 years of age—but the convenience of the students will be considered.

The head masters will be assisted by teachers of the various subjects of instruction, who, in addition to being experienced masters, have had a thorough business training.

During the session the following course of Lectures will be given: Banking and Commercial Law—Insurance.

Time Tables.—It will be found convenient to organise the Commercial Evening School in two sections—

(*a*) For pupils under 18 years of age—juniors.

(*b*) For pupils over 18 years of age—seniors.

The regular school course being taken on Monday, Tuesday, and Thursday evenings. In the two following time tables, I give an example of such a school for juniors and also one for seniors. At all schools for seniors the off nights, viz., Wednesday and Friday, may be employed for separate classes in the subjects which may be attended by pupils who do not desire to take the school course.

TIME TABLE.

COMMERCIAL EVENING SCHOOL FOR JUNIORS UNDER EIGHTEEN YEARS OF AGE.

EVENINGS.	HOURS.	SUBJECTS.
Monday	7 to 8	Arithmetic
"	"	Shorthand
"	"	Typewriting
"	8 to 9	Arithmetic
"	"	Shorthand
"	"	Typewriting
Tuesday	7 to 8	Writing
"	"	French
"	"	German
"	"	Spanish
"	"	Typewriting
"	8 to 9	French
"	"	German
"	"	Spanish
"	"	Writing
"	"	Commercial Geography
"	"	Typewriting
Thursday	7 to 8	English
"	"	Bookkeeping
"	"	Typewriting
"	8 to 9	English
"	"	Bookkeeping
"	"	Typewriting

TIME TABLE.

COMMERCIAL EVENING SCHOOL FOR SENIORS OVER EIGHTEEN YEARS OF AGE.

EVENINGS.	HOURS.	SUBJECTS.
Monday	6 to 10	Typewriting
"	"	Shorthand Reporting
"	7 to 8	Arithmetic (Three Stages)
"	"	Shorthand (Three Stages)
"	8 to 9	Shorthand (Three Stages)
"	"	Arithmetic (Three Stages)
Tuesday	6 to 10	Typewriting
"	"	Shorthand Reporting

EVENINGS.	HOURS.	SUBJECTS.
Tuesday	7 to 8	English
,,	,,	Bookkeeping
,,	8 to 9	Bookkeeping
,,	,,	English
Thursday	6 to 10	Typewriting
,,	,,	Shorthand Reporting
,,	7 to 8	Writing and Commercial Correspondence
,,	,,	French
,,	,,	German
,,	,,	Spanish
,,	8 to 9	French
,,	,,	German
,,	,,	Spanish
,,	,,	Writing and Commercial Correspondence

NOTE.—Commercial Geography, Italian, Portuguese, Lecture Courses—On Friday Evenings.

SUBJECTS OF INSTRUCTION IN COMMERCIAL EVENING SCHOOLS.

Commercial Handwriting and Composition. — No accomplishment is of higher importance to a youth desirous of obtaining a situation in a commercial house than the ability to write a good hand. Modern copybooks have a great deal to answer for in developing a bad style of writing. The teacher of handwriting in a Commercial Evening School should be a thoroughly capable man, competent to teach the art of writing by setting copies on the blackboard, and fully alive to the importance of enabling his pupils to acquire the art of writing in a neat and thoroughly legible style, and to compose letters in a terse and businesslike manner. Correspondence of various kinds should largely enter into the instruction, and the pupils be made familiar with all the details of ordinary business correspondence. Precis-writing and the docketing of letters should be dealt with, whilst indexing and the press-copying of letters should be practically explained.

Arithmetic.—The application of figures in ordinary commercial calculations needs thorough attention. Rapidity and neatness in calculating prices, and the supreme importance of securing accuracy in addition of money columns, the working of percentages and discounts, making out of invoices and bills of various kinds, need to be thoroughly taught in the school. Mental arithmetic should receive constant attention, and the customs of the trade of the district in financial matters be made familiar to the pupils.

Bookkeeping.—The principles of single and double entry, which underlie all commercial bookkeeping, should be an important department of the instruction. Each pupil should be supplied with a miniature set of books, consisting of journal, day-book, cash-book, and ledger. A set of such books, made up in stiff paper covers, size 7in. by 9in., 32 pages, may be supplied to the pupils at a cost of 1s. for the set. The following are the headings of the Ledger and Cash Book:—

LEDGER.

CASH BOOK.

Invoice-books, cash receipt-books, sales delivery-books, and the other subsidiary books of the counting-house, must all receive due attention at the hands of the teachers.

As the instruction advances pupils will be taught how to make out profit and loss accounts, prepare balance-sheets, and partnership accounts.

Pupils should be encouraged to sit at the examinations conducted in the locality. Chambers of Commerce might very well give encouragement to this important branch of commercial education by holding annual examinations in this and other subjects of business education. Certificates of proficiency should be awarded to the pupils who satisfy the examiners. The fees for the examination must not, however, be prohibitory. The Commercial Examinations of the Society of Arts are admirable, and by arrangement may be held in any locality, on application being made to the Secretary, John Street, Adelphi, London, W.C.

Shorthand.—The time has arrived when it is necessary that every youth who desires to secure advancement in the office or warehouse should have a knowledge of this invaluable aid to correspondence. The bulk of the correspondence in all houses of any size is now dictated by the principals to clerks skilled in phonetic shorthand. Accuracy and speed are essentials, and can only be acquired by practice and supervision. Time tests, *i.e.*, reading of exercises by skilled teachers, form an important feature of this instruction in its higher branches.

The classes may be graded thus: beginners, intermediate, and advanced. Reporting from dictation and rapid blackboard instruction must be largely relied on, and the careful correctness of all line work is absolutely necessary, correct spelling, punctuation, and neat manuscript being insisted upon, the compilation of market reports, quotations, and prospectuses, each being fully explained and repeatedly practised. The teacher must also be careful to see that his pupils understand fully the meaning of all technical phrases. It is hardly necessary to add that the pupils should be encouraged to avail themselves of examinations conducted by recognised authorities.

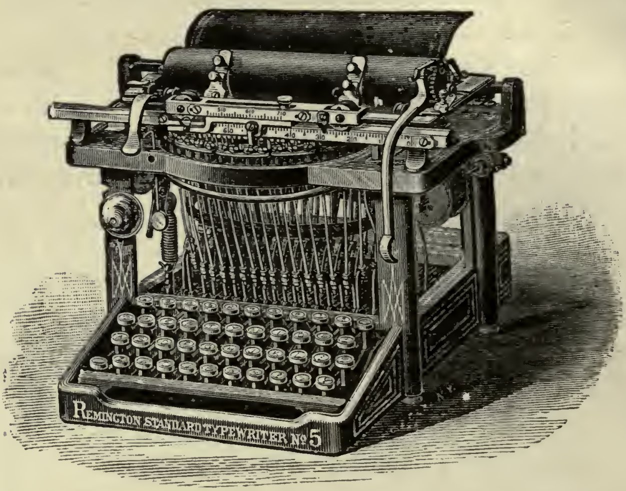
As the New Code now recognises shorthand as a subject on which grants may be earned in Day and Evening Schools, it is not too much to hope that when pupils join the Advanced Evening School they will have already mastered the elements of this subject.

Typewriting.—The rapid progress that typewriting has made of recent years in business houses is producing a marked change in our mode of conducting business. The typewriter has now established itself in public favour, and is indispensable wherever large masses of correspondence and the issue of written matter in quantity is a necessity. In one insurance office alone, in Manchester, the copying of reports, which formerly occupied the time of 30 clerks, is now altogether effected by typewriting machines.

In the Commercial Evening Schools of the Manchester School Board forty-eight machines are constantly employed for purposes of instruction. Lady instructors are employed, and only those pupils are taught who have previously arrived at proficiency as shorthand writers. It is in conjunction with shorthand that the typewriter is of value. With an accomplished shorthand writer as clerk the principal of a commercial house may, between 8-30 and 9-30 a.m., dictate replies to the letters which will occupy the same clerk the whole of the day to write by means of the typewriter, transcribing from his shorthand notes.

There are various kinds of typewriting machines, and it is not my intention to enter into their respective merits. In the Manchester Commercial Evening Schools we use the

Remington Standard Typewriter exclusively, and it has been found satisfactory. No. 5 is the most serviceable kind, and the machines when new are sold at £22 each. The following is the typewriting machine referred to :—



Instruction is given on the mechanism and correct fingering of the machine, and the acquisition of speed, accuracy, and neatness of work are considered of the first importance.

Carelessly-written and abbreviated MSS., tabular matter, are given to the learners for transcription, and the pupils are also required to write at length from their own shorthand notes.

The finger board is easily mastered. Proficiency is only obtained by practice. A fairly good operator should manage to write 40 words per minute. Pupils must be carefully supervised and required to keep their machines in good order, and report immediately any damage. The machines are not easily deranged if moderate care is taken of them. When not in use Machines should be covered with a case, which may be made of American cloth, and carefully locked up in cupboards, provided with suitable shelves for their reception.

Modern Languages.—Students of the Commercial Evening School should have the privilege of attending one or two of the classes in the following languages, viz., French, German, or Spanish. Additional classes may be held in modern languages on the nights of the week not occupied by the Commercial Evening School.

Commercial Geography and History.—During the Session a course of say 20 Lectures may be given with great advantage.

Commercial or Economical Geography, as contrasted with General Geography, may be defined as the department that deals with the geographical distribution of commercial products—chiefly food products, raw products, and manufactured products.

It implies a knowledge of (1) the localities where, and the conditions under which, these are produced; quantities available for export; the capacities of new countries, like Africa and Australia, for commercial development: (2) the various facilities and hindrances to trade, so far as these are geographical; political and social characteristics likely to affect trade; communication by land and sea, &c.

Commercial History treats of the acquisition and diffusion of wealth among nations as the result of industry and enterprise. It records the vicissitudes of trade, and compares the burdens and resources of modern States in various ways, &c.

It should, however, be borne in mind that commercial or economical geography can never be satisfactorily studied without a sound knowledge of physical geography, which underlies it. Intending students will do well, therefore, to peruse one of the numerous text-books on Physiography, or Physical Geography, which can be seen in all the Public Free Libraries. They should also provide themselves with a flat rule, pencil, compass, and note-book, for making maps, and taking notes. (*Abridged Society of Arts Syllabus.*) In illustration of the above syllabus, the following subjects and substances may be lectured upon—particular attention being given to those facts in the history of each country for which the peculiar circumstances of its geography have rendered it especially noteworthy, as indicated below:—

I.—ECONOMICAL GEOGRAPHY AND COMMERCIAL HISTORY OF COUNTRIES.—(1) Lancashire, illustrating the laying of the foundations of modern trade and commerce; or, the rise and development of the textile manufacturing industries, especially cotton; and the rise and development of modern means of communication, especially the railway. (2) Great Britain, with a study of the rise and development of our commercial supremacy. (3) Our great industrial and commercial rivals, France, Germany, and the United States: (*a*) France, also as an agricultural country, contrasted from an economical point of view with Great Britain, a mining and manufacturing one. (*b*) Germany, also illustrating the advantages and disadvantages of such commercial combinations as the old Hanse League, and the modern Zollverein, with special reference to the federation of the British Empire. (*c*) United States—studied as our provider, best customer, and greatest rival. (4) Selected foreign countries as rival producers, sources of raw materials, markets for finished goods, or fields for emigration. (5) Selected British Colonies or Possessions as rival producers, sources of raw materials, markets for finished goods, or fields for emigration. (6) The Balkan Peninsula and the Eastern Question.—(*a*) Old Turkey, New Europe, and the highway to India. (*b*) Greece, or the Britain of the Mediterranean; the lessons to be learnt from a study of the rise and decline of her colonial and commercial supremacy in the past, with an application of these lessons to the case of the colonial and commercial supremacy of Britain in the present.

II.—ECONOMICAL GEOGRAPHY AND COMMERCIAL HISTORY OF PRODUCTS.—(1) The raw materials of commerce—their source, use, distribution, and commercial history generally; with the following specially: (2) Bread plants, with the trade in grain. (3) Beverage plants, with the trade, in tea, coffee, and cocoa. (4) Clothing plants, with the trade in cotton and linen goods.

The lectures will be fully illustrated by maps, plans, and diagrams, and with specimens of the materials of commerce in their raw state, in the progress of manufacture, and as finished goods.

REFERENCES.—(*a*) Geography: Yeats' "Natural History of the Raw Materials of Commerce;" Casartelli's or Zehden's "Commercial

Geographies;" Johnston's "Multum in Parvo Atlas;" or Longman's "New Atlas." (*b*) History: Yeats' "Growth and Vicissitudes of Commerce," "Recent and Existing Commerce," "Technical History of Commerce;" Johnston's "Statistical Atlas of Commercial Geography;" Fawcett's "Political Economy for Beginners."

Lectures.—In connection with these advanced Commercial Evening Schools lectures in suitable subjects are very highly appreciated. The following are given as examples of what such lectures may be. The courses have been given and were very highly appreciated by the pupils. The lecture should be given one evening per week, and at such a time as will interfere the least with the class work of the school. They should be free to pupils of the Advanced Evening School, a small fee (say of 3s. 6d. for each course) being charged to persons who do not belong to the school, provided there is room.

The lecturer should be a recognised authority on his own subject.

SYLLABUS OF LECTURES ON BANKING.

History of Banks of Issue and Deposit in England, Scotland, and Ireland: Bank of England—The Relation between Bank and Customer—Customers—Agent—Executors — Administrators — Companies—Corporations—Husband and Wife—Liquidators—Partners—Trustees—Customer's Pass-book and its Effect between Banker and Customer—Bills of Exchange—Letters of Credit—Circular Notes——Postal Orders—Cheques—Crossed Cheques: General and Special Crossing—Stamp Duty—London Clearing-house—Country Clearing-houses — Foreign Cheques — Non-business Days — Payment in Counterfeit Coin—Payment in Forged Notes—Payment in Bills of Exchange—Dishonoured Cheques—Forged Security—Forged Endorsement—Altered Cheques—Cashed Cheques—Cheques as Payment—Stopped Cheques by Drawer—Cheque as Evidence of Debt—Cheque as Proof of Payment—Bank Notes—Legal Tender—Lost or Stolen Notes—Finder of a Lost Note—Forged or Altered Notes—Bankruptcy of a Banker Issuing Notes—Appropriation of Payments—

Debtor has the First Right to Appropriate—Right of Creditor to Appropriate in Default of Appropriation by Debtor—How the Law Appropriates. Rule as to Banking Account—Effect of Fraud—Banker's Lien—When and How it Arises. Branch Banks—Deposits with Bankers for Safe Custody—Bankers and Correspondent. Appropriation of Securities—Seller and Buyer—Principal and Agent—Consignor and Consignee—Bill-holder and Goods. Principal and Surety—Form of Guaranty—Essentials of a Contract—When it can be Revoked—Discharge of Guarantor—Measure of Surety's Liability—Rights of Surety. Manager: Powers of Manager—When the Bank is Responsible for his acts—Liability of Manager to Principal—Recent Cases—Scope and Effect of Recent Legislation.

SYLLABUS OF LECTURES ON INSURANCE.

Lecture 1.—Basis of Demand for Insurance—Its Object and Early Methods Considered—Causes of their Failure—Gambling Insurances—The Legal Limits of Insurance—True Basis of Insurance—Mortality Tables; Their Bearings on all Insurance Calculations—Expectation of Life—General Method of Arriving at Same—Inferences from Expectation Tables—Insurance under Natural and under Level Premiums Compared—Assessment or Levy System—Its Ruthless Effects—Consideration of the Arguments Employed in Support of It.

Lecture 2.—Mortality and Interest—Effects of Compound Interest—The Function of Insurance—Its Sources—Comparison of Insurance with Investment—Risk of Irresolution and Uncertainty of Life—Surrender Values—Paid-up Policies—Effects of Inaccurate Tables of Mortality—How Counteracted—Effects of Assuring Excessive Rates of Interest.

Lecture 3.—Forces Acting on Sources of Supply—The Demands on Funds—Provisions for Expenses—Construction of Short Table—Working of Fund—Share of Each Survivor in Same—Effects of Surrenders Considered—Method of Measuring Expenses—Sources of Profit Exemplified—Various Methods of Distributing Profits—True Test of a Bonus.

Lecture 4.—Limited Payments—Insurances Payable at Death—Endowment Insurances—Mutual, Proprietary, and Mixed Systems Considered—Expenses of Management—Policy Conditions—Purchase of Life Policies—General Method of Ascertaining Values—Publication of Accounts—Periodical Valuations—Insurance Legislation—Conclusion.

SYLLABUS OF LECTURES ON COMMERCIAL LAW.

Master and Servant—Principal and Agent—Husband and Wife—Parent and Child—Landlord and Tenant—Debtor and Creditor.

Prizes.—These should be given for the encouragement of pupils. The following is a list of prizes and awards open for competition to pupils attending the classes with which I am connected:—

BY THE MANCHESTER SCHOOL BOARD.

1. Six prizes of 21s. each will be awarded to the six members of the Commercial Evening Schools who stand highest in the examination for the full certificate of commercial knowledge of the Lancashire and Cheshire Institutes.

2. Six prizes of 10s. 6d. each to the next six members of the Commercial Evening Schools obtaining the full commercial certificate.

3. Prizes of 10s. 6d. each to the members who are first in order of merit in the Society of Arts Examinations, and of 7s. 6d. to the first in the Lancashire and Cheshire Institutes' Examination in each of the following subjects, viz., arithmetic, English, bookkeeping, shorthand, French, Italian, German, Portuguese, Spanish, and typewriting.

4. Two prizes of 10s. 6d. each to the members of the Commercial Evening Schools obtaining the highest aggregate of marks in the commercial geography and history examinations of the Society of Arts and the Lancashire and Cheshire Institutes.

5. All the prizes offered in the Elementary Evening Schools.

6. A Standard Remington Typewriter, value £22, for proficiency in typewriting.

BY THE SOCIETY OF ARTS.

1. Prizes of £3 to the candidates who are first in order of merit, and of £2 to the candidates who are second in order of merit, in each of the following subjects: English, commercial geography, French, German, and Portuguese.

2. Prizes of £5, £3, and £2 to the first, second, and third candidates respectively, in Italian and Spanish.

3. First and second class certificates in the following subjects: Arithmetic, English, bookkeeping, commercial geography, shorthand, French, German, Spanish, political economy, domestic economy, theory and practice of music.

4. First-class certificates in (1) "Commerce of Food;" (2) "Commerce of Clothing." Travelling scholarships of £50 are awarded in competition among candidates obtaining first-class certificates in one or other of the foregoing, and also in arithmetic, bookkeeping, gography, English, and two foreign languages.

BY THE UNION OF LANCASHIRE AND CHESHIRE INSTITUTES.

(The prizes are restricted to holders of first-class certificates.)

1. Commercial Arithmetic.—First prize, exhibition of 25s., with book, value 5s.; second prize, exhibition of 15s., with book, value 5s.

2. English.—First prize, exhibition of 25s., with book, value 5s.; second prize, exhibition of 15s., with book, value 5s.

3. French.—First prize, exhibition of 25s., with book, value 5s.; second prize, exhibition of 15s., with book, value 5s.

4. German.—First prize, exhibition of 25s., with book, value 5s.; second prize, exhibition of 15s., with book, value 5s.

5. Spanish.—First prize, exhibition of 25s., with book, value 5s.; second prize, exhibition of 15s., with book, value 5s.

6. Portuguese.—First prize, exhibition of 25s., with book, value 5s.; second prize, exhibition of 15s., with book, value 5s.

7. Italian.—First prize, exhibition of 25s., with book, value 5s.; second prize, exhibition of 15s., with book, value 5s.

8. Shorthand.—First prize, exhibition of 25s., with book, value 5s.; second prize, exhibition of 15s., with book, value 5s.

9. Bookkeeping.—First prize, exhibition of 25s., with book, value 5s.; second prize, exhibition of 15s., with book, value 5s.

10. Typewriting.—First prize, exhibition of 25s., with book, value 5s.; second prize, exhibition of 15s., with book, value 5s.

11. Commercial Geography and History.—First prize, exhibition of 25s., with book, value 5s.; second prize, exhibition of 15s., with book, value 5s.

12. Handwriting.—First prize, exhibition of 25s., with book, value 5s.; second prize, exhibition of 15s., with book, value 5s.

13. Social and Political Economy.—First prize, exhibition of 25s., with book, value 5s.; second prize, exhibition of 15s., with book, value 5s.

14. Machine Calculations.—First prize, exhibition of 25s., with book, value 5s.; second prize, exhibition of 15s., with book, value 5s.

15. English History.—First prize, exhibition of 50s., with book, value 5s.; second prize, exhibition of 25s., with book, value 5s.; third prize, exhibition of 10s., with book, value 5s.

16. English Literature.—Prize, £1 in books.

17. Theory of Music.—First prize, the "Sir Charles Halle" exhibition of 35s., with book, value 5s.

18. Foreign Languages Exhibition.—An exhibition of £2 2s., will be awarded to the candidate who shall pass highest in French, German, Spanish, Portuguese, and Italian. To obtain the exhibition the student must pass in at least two subjects, of which one must be French.

19. Special Prize for Typewriting.—Messrs. Wycoff, Seamans, and Benedict (the Remington Standard Typewriter Manufacturing Company) offer a Remington standard typewriter, value £22, for competition amongst the students attending classes in connection with the Union of Institutes, at the examination in typewriting.

20. Special Prizes for Females: English Literature or English.—First prize, exhibition of 25s., with book, value 5s.; second prize, exhibition of 15s., with book, value 5s. The above exhibitions are tenable, at the option of the candidate, either at the Evening Classes at Owens College, Manchester; University College, Liverpool; or at the Institute to which the candidate belongs, if the teaching be satisfactory to the Council.

21. Full Commercial Certificate Exhibition.—To the candidate who, in the opinion of the Council, stands the highest on the full commercial certificate list, will be awarded an exhibiton of £2 10s., tenable at the Evening Classes at Owens College, Manchester, or University College, Liverpool. A Political Economy Class to be one of the classes taken.

Examinations.—As far as possible the pupils under 21 years of age should be obliged to sit at the annual examination, conducted by H.M. Inspector, in connection with the Education Department, and the grants obtained.

The Society of Arts conduct the following examinations in commercial subjects. It is necessary that the managers should subscribe £2 2s. per annum to the society, and the fee (payable by the pupil) for each subject is 2s. 6d. per subject. The secretary of the school must advise the Society of Arts of the number proposing to sit by the middle of March, and the Local Committee of the school must supervise the examination on the appointed nights.

The following is a list of the examinations for the present year (1892), and the time table is appended:—

COMMERCIAL AND SPECIAL EXAMINATIONS.

Candidates to give notice to the Local Secretary not later than March 15th, 1892.

Thursday,	April	21st,	7-0 to 9-30 p.m.	Machine Calculations. Portuguese (Elementary and Advanced). English Grammar, Composition, Precis Writing).
Friday	„	22nd,	7-0 to 9-30 p.m.	French (Elementary and Advanced). Special Period of History (1760 to 1815).
Monday,	„	25th,	7-0 to 9-30 p.m.	German (Elementary and Advanced). Commercial Geography. English Literature.
Tuesday,	„	26th,	7-0 to 9-30 p.m.	Bookkeeping. Social and Political Economy.
Wednesday,	„	27th,	7-0 to 9-30 p.m.	Commercial Arithmetic.
Thursday,	„	28th,	7-0 to 8-0 p.m.	Handwriting.
			8-15 to 9-30 p.m.	Shorthand.
Friday,	„	29th,	7-0 to 9-30 p.m.	Typewriting. Spanish (Elementary and Advanced).
Monday,	May	2nd,	7-0 to 9-30 p.m.	Italian (Elementary and Advanced.) Theory of Music (Advanced).

SOCIETY OF ARTS EXAMINATION, 1892.—TIME TABLE.

Monday, April 4th. (7 to 10 p.m.)	Tuesday, April 5th. (7 to 10 p.m.)	Wednesday, April 6th, (7 to 10 p.m.)	Thursday, April 7th. (7-30 to 10p.m.)
Arithmetic German Portuguese Russian Danish Chinese Japanese	Bookkeeping Italian Spanish Domestic Economy	English French Commercial Geography Theory of Music Typewriting (from 7-30 to 10 p.m.)	Shorthand.

The practical examination in vocal and instrumental music will commence on Monday, the 30th of May.

In choosing the subjects in which they desire to be examined, candidates must take notice of the arrangements of the time-table, as they cannot be examined in more than *one* subject on each evening.

In various localities there are also other examinations of a like nature, which should as far as possible receive the countenance of the managers of the school. The Union of Lancashire and Cheshire Institutes perform admirable work in this direction for the counties of Lancaster and Chester.

Hints on General Management.—What I have already said about the management of Evening Continuation Schools (page 34) very largely applies to these Advanced Evening Schools.

Thoroughly competent teachers and lecturers must be secured, the schools must be well advertised, the comfort of the pupils carefully attended to, and nothing be thought too insignificant for attention which is likely to increase the attendance at the schools and the efficiency of the instruction.

The session should commence in the middle of September, and the Evening School proper go on to the end of April, in order to clear the Society of Arts Examinations.

It is a good plan to have a limited number of classes going on during the summer months—end of April to middle of July. These keep a valuable number of pupils together, and will have an appreciable effect upon the numbers joining at the re-opening of the school in September. It will be seen that the scale of fees (given on page 74) provides for such a summer session.

For each full member of the Commercial Evening School it is a good plan to provide a small leather ticket of membership (something after the pattern of a railway season ticket). These tickets cost little, and are much more serviceable than a ticket made of cardboard.

The school may be attended with advantage by both women and men. In large centres of population Commercial Evening Schools may be conducted at given centres for women and girls, provided the services of lady teachers of sufficient experience can be secured.

I should like to see a system of small bursaries established to encourage deserving pupils from the Elementary Evening Schools to attend the Advanced Commercial Evening Schools. These bursaries need not be of any great money value. I believe that small bursaries of £2 each would achieve all that is necessary, and here County Councils might render efficient aid. The bursaries should, however, be offered at the commencement of the session in September, the amount being payable at the end of the session (say in April) upon a suitable certificate to be given by the committee of the school vouching for the regular attendance and satisfactory progress of the holder of the bursary.

In large towns it will be well to make arrangements by which pupils may for 3d. or 4d. obtain a cup of tea and bread and butter at the school. Many office boys and junior clerks cannot spare time to go home to tea after business hours, and ordinary restaurants are, as a rule, too expensive for their limited means.

When possible, there should be a common room, where pupils may read suitable papers, periodicals, and reviews, supplied by the committee, and a small reference library will be found of immense value.

The head master of the Evening School will keep a register of pupils requiring situations, and it should be made known that heads of firms may apply when vacancies require filling.

If the Evening Schools of all kinds in a district are sufficiently numerous, it will be found a capital plan to issue a monthly magazine, a part of which should be devoted to each section of the work. In Manchester we have a very prosperous magazine, known as *The Evening Student*, which since its establishment has done a good work in fostering *esprit de corps* in our Night Schools. It is controlled by a committee of teachers and officials, who are responsible to the Board for the contents. The magazine is self-supporting, and is sold at a penny. Portraits of teachers and distinguished pupils form a feature of our journal, and the contents are made as varied and interesting as possible. Notices of societies connected with our Evening Schools appear in its pages, and papers of examination questions appear regularly.

During the winter we have our various societies, and in the summer a rambling club. At Christmas there are largely-attended parties, and everything possible is done to encourage good-fellowship and a spirit of friendly feeling among the pupils and for the school to which they belong.

In university life men learn to love and respect the place where they have received their education, and in after life refer with respect and affection to their *alma mater*. Why should not their less fortunate brethren and sisters living in the crowded districts of large towns also in a like manner be taught so to think of the Evening School, where in early life they in their turn received no less valuable lessons in training and culture? I am sufficiently sanguine to hope that the next generation may see such a happy consummation brought about by a well-organised system of Evening Schools wisely and liberally maintained.

Fees.—The following are the fees charged in the Commercial Evening Schools, in whose management I am directly concerned:—

(For pupils under 18 years of age.)

Inclusive fee for school course three evenings per week, September 14th, 1891, to July 15th, 1892	10s.
Ditto September 14th to April 29th	7s. 6d. or 6d. per week.

(For pupils over 18 years of age.)

Inclusive fee for school course three evenings per week, September 14th, 1891, to July 15th, 1892	12s. 6d.
Ditto September 14th, 1891, to April 29th, 1892	10s. 6d.

SEPARATE SUBJECTS AND LECTURE COURSES.

Bookkeeping	3s. per quarter ;	5s. per half-year ;	6s. 6d. per session.
Shorthand	3s. ,,	5s. ,,	6s. 6d. ,,
Writing	4s. 6d. ,,	7s. 6d. ,,	10s. ,,
Arithmetic	3s. ,,	5s. ,,	6s. 6d. ,,
English	3s. ,,	5s. ,,	6s. 6d. ,,
Languages (each)	5s. ,,	7s. 6d. ,,	10s. ,,
Matriculation Classes (September to June)			21/- per course.
Lectures—Commercial Law, 3 courses			2s. 6d. ,,
Insurance, 1 course			2s. 6d. ,,

Quarter ends December 25th, 1891 ; half-year ends March 30th, 1892.
Session ends July 15th, 1892.

Code Requirements.—So far as the pupils in the Commercial Evening Schools are concerned, the Code requirements are the same as for Elementary Evening Schools (page 38). As practically all the pupils will have passed Standard V., they come in for the exceptional treatment by the rules of the Education Department, and may be presented freely in the extra subjects allowed, such as bookkeeping, shorthand, modern languages. For some inscrutable reason the Education Department have so far refused to allow pupils to be presented in typewriting. With regard to registration, the Education Department allow two attendances of an hour each to be made by a pupil in one evening.

Grants.—The Commercial Evening Schools are available for assistance from the Technical Instruction funds, so far as the subjects of instruction have on the application of the County Council received the sanction from the Science and Art Department. In the lists submitted I believe these subjects generally find a place. (See list of subjects of Technical Instruction, page 214.) The grants for the Education Department for pupils under 21 years of age are the same as those specified on page 40.

Teachers.—In the Commercial Evening School it will be readily understood that if all is to be accomplished that I have sketched out in the scheme of such a school a wise and experienced head master must be placed in charge. He must have an ample staff of well-qualified and loyal assistants on the permanent staff of the school, and in most cases this staff will have to be supplemented by visiting teachers, principally of foreign languages.

The head master must carefully supervise all the instruction of the school, and make the regular attendance of the pupils his constant study. He should have a room at the school, where, at stated times, it can be made known that he will see pupils and their parents or friends, and he should, as far as possible, make himself fully acquainted with the needs of his pupils, advising them in the subjects they can take up, and exercise a watchful oversight in connection with everything likely to affect his Evening School.

Each pupil should have his own time table, showing the classes he has, with the approval of the head master, entered for, and these time tables should bear the signature of the head master. The head master must be held responsible for the economical use of stationery, &c., and the regular accounting for fees received and money derived from the sale of books, &c.

Balance Sheets.—The following are balance sheets of two Commercial Evening Schools conducted during the session of 1891-92. The first (A) is for a junior school, for pupils under 18 years of age; average for session, 122; number of pupils enrolled, 195. The second (B), a large senior school for pupils over 18; average for session, 291; number of pupils enrolled, 390. In the Senior School there were a large number of pupils over 21 years of age who were not eligible to earn the Education Department's grant. The receipts for fees in this school were largely increased by payments for separate classes.

A)

Account of the Income and Expenditure of a Junior Commercial Evening School for the Session 1891-92, *showing the amount actually received and actually disbursed during the Session.*

INCOME.	£	s.	d.	EXPENDITURE.	£	s.	d.
To Grant from Committee of Council on Education	84	12	0	By Salaries of Teachers	157	1	10
„ School Fees Paid by Pupils	68	4	6	„ Books, Apparatus, and Stationery	44	6	0
„ Amount Received for Books and other Articles Sold to Pupils	15	0	6	„ Fuel, Light, and Cleaning	10	0	0
„ Technical Instruction Grant	57	9	0	„ Prizes	13	18	2
Total	£225	6	0	Total	£225	6	0

(B)

Account of the Income and Expenditure of a Senior Commercial Evening School for the Session 1891-92, *showing the amount actually received and actually disbursed during the Session.*

INCOME.	£	s.	d.	EXPENDITURE.	£	s.	d.
To Government Grant	105	8	0	By Salaries of Teachers	586	1	7
„ Fees	477	18	6	„ Books, Apparatus, &c.	134	13	2
„ Books, Apparatus, &c., Sold	25	13	5	„ Fuel and Light	20	0	0
„ Examination Fees	2	15	0	„ Furniture and Repairs	5	15	0
„ Technical Instruction Grant	164	18	4	„ Prizes	17	5	0
				„ Cookery Materials	0	3	6
				„ Examination Fees, &c.	12	15	0
Total	£776	13	3	Total	£776	13	3

CHAPTER IV.

ADVANCED EVENING SCHOOLS—TECHNICAL INSTRUCTION FOR WOMEN AND GIRLS.

THE EVENING INSTITUTE FOR WOMEN AND GIRLS.

ONE of the most pleasing features of the recent development of technical instruction is the attention now being paid to the needs of women and girls. In all parts of the country, wherever Local Authorities and County Councils have taken in hand technical instruction, the schemes embrace such subjects as cookery, dressmaking, and laundry work.

A successful experiment has been carried out in Manchester to organise such instruction, of a more or less advanced kind, in special schools for women and girls, being pupils over 16 years of age. These schools have been called "Evening Institutes for Women and Girls."

In the following pages I propose to explain the details of the scheme of instruction adopted, and I will only add, in passing, that such an organised system of instruction, under the control of lady superintendents, is of far higher value than the establishment of isolated classes in cookery and dressmaking, held without any connection with each other, and which are, I regret to say, so largely on the increase in different parts of the country.

Scheme of Instruction.—To provide continuous instruction on five nights each week in the following subjects: Cookery, millinery, needlework and cutting-out, dressmaking by tailor measurement, laundry work, sick nursing, physiology, domestic economy, English literature and composition. Each centre is supplied with a perfectly fitted-up laundry, and all appliances necessary for teaching the various subjects taken up.

Time Table.—The following is an example of a time table. It will be seen that the subjects have been so arranged that pupils not able to attend regularly on given nights in the week may have a choice of alternative nights for the different subjects:—

EVENINGS.	HOURS.	SUBJECTS.
Monday	7 to 9	Cookery Demonstration
"	"	Dressmaking
"	"	Laundry
"	7 to 8	Domestic Economy
"	"	English Literature
"	8 to 9	Domestic Economy
"	"	English Literature
"	"	Physiology
Tuesday	7 to 9	Cookery Practice—Group I.
"	"	" " " II.
"	"	" " " III.
"	"	Dressmaking
"	"	Laundry
"	"	Millinery
"	7 to 8	Domestic Economy
"	"	Physiology
"	"	English Literature
"	8 to 9	Domestic Economy
"	"	English Literature
Wednesday	7 to 9	Cookery Demonstration
"	"	Dressmaking
"	"	Laundry
"	"	Millinery
"	7 to 8	Domestic Economy
"	"	English Literature
"	8 to 9	Domestic Economy
"	"	English Literature
Thursday	7 to 9	Cookery Practice—Group I.
"	"	" " " II.
"	"	" " " III.
"	"	Dressmaking
"	"	Laundry
"	7 to 8	Domestic Economy
"	"	English Literature
"	8 to 9	Domestic Economy
"	"	Physiology
"	"	English Literature
Friday	7 to 9	Cookery Demonstration
"	"	Dressmaking
"	"	Laundry
"	"	Millinery
"	7 to 8	Domestic Economy
"	"	English Literature
"	8 to 9	Domestic Economy
"	"	English Literature

LIBRARY OF THE

Advanced Cookery.—The cookery is taught both in theory and practice by duly-qualified lady instructors. The course will include instruction in the preparation for the table of every-day food, the use of cooking utensils, and lessons in domestic economy and household management. Demonstrations in middle-class cookery will be given for senior pupils. Better-class dishes will be cooked, such as meat and fish entrees, plain and fancy pastry and puddings, omelets, jellies, creams and cakes, as well as a few decorated dishes suitable for Christmas. The dishes cooked will be sold at cost price to the pupils. The list of utensils already given on page 26 will have, to a small extent, to be supplemented by moulds, and a few other appliances to be supplied as required by the teacher. Gas stoves should be used (for example see page 251), and on page 249 will be found a plan of a cookery-room. When a properly-fitted room is not available, a classroom of moderate dimensions will answer fairly well.

Millinery.—The instruction consists entirely of practical work under the supervision of a skilled milliner. The pupils provide all their own materials. The trimming of children's hats and bonnets should not be overlooked by the teacher.

Needlework and Cutting-out.—Here the work may follow generally the Schedule of the Code of the Education Department (page 53 of Manual), and the class may be a preparatory one for the dressmaking class.

Dressmaking.—Taught by the blackboard, in order to show the pupils how to take the various measurements for the bodice. Then the pupils measure one another, and draft paper patterns, afterwards cutting-out their dresses in their own materials, the teachers carefully checking the measurements before the cutting-out is commenced. Each pupil must be supplied with a tailor's measure (value 2s.), a tracing wheel (value 1½d.), and printed directions showing the various measurements necessary. It must be borne in mind that the object of the class is not to turn out dressmakers, but to enable the pupils to make their own dresses.

Laundry Work.—A specially-appointed room must be provided for the teaching of laundry work, instruction being given by a duly-qualified teacher in the washing of various kinds of clothes, drying, folding, ironing, clear-starching, &c. The following is a scheme of work:—

COURSE OF LESSONS IN ELEMENTARY LAUNDRY WORK.—Ten lessons of two hours each; demonstration, three-quarters of an hour; practical work, 1¼ hour.

1. Washing flannels. Use of ammonia, &c.
2. Disinfecting and removing stains. Salt, handkerchiefs, stockings, &c.
3. Properties of water and of soap. Method of washing lace, muslin, &c., boiled starch.
4. Ironing, irons. Cleaning and heating. Table.
5. Washing body linen. Mangling, drying, &c.
6. Cold starch. Ironing and polishing linen. Turpentine, wax, borax.
7. Ironing of body linen. Damping, folding, &c.
8. Paraffin washing. Rinsing and hanging to dry.
9. Washing prints and silk. Goffering. Setting and renewing colour.
10. Washing silk and woollen fancy work, cretonne, &c.

The course might be increased to twelve lessons, and 11 and 12 be devoted to the getting-up of a shirt. For plan of laundry see page 252. Each laundry should have a wringing machine, a clothes horse for drying clothes, gas stove for heating irons, tables for ironing, &c., together with a supply of ironing blankets, &c.

Lectures on Sick Nursing.—During the session a course of lectures on sick-nursing should be given by a lady with hospital experience. The following is an admirable series of lectures.

SICK-NURSING LECTURES.

1. THE SICK ROOM.—How to arrange and ventilate the sick room. How to make up the bed and change the sheets and bed linen.

2. THE SICK NURSE.—Daily duties to patient. How to wash and feed him. Notes for the doctor. Bed sores, &c.

3. INFECTIOUS DISEASES.—Precaution. Disinfectants. Fumigation. How to keep, break, and apply ice, &c.

4. OUTWARD APPLICATIONS.—Fomentations. Poultices. Plaisters. Ointments. Lotions. Baths. Hot and cold packs, &c.

5. NURSING OF CHILDREN'S DISEASES.—Thrush. Convulsions. Rickets. Whooping-cough. Croup, &c.

6. EMERGENCIES.—Accidental poisoning. Fainting. Fits. Burns and scalds. How to put out fire. Drowning. Artificial respiration. Bleeding. How to bandage, &c.

The lecturer should be provided with a suitable platform. For the first lecture an ordinary hospital iron-bedstead and mattress, with sheets, must be provided, and a young girl can enact the part of the patient. A pan, with gas stand, will be required for the poultice-making in the fourth lecture. Lint, bandages, &c., will also be required.

It seems hardly necessary to add that no member of the sterner sex should be present at these lectures. As a full room is conducive to a successful lecture, the pupils should be encouraged to bring their friends. Those who do not belong to the institute may very well pay 1s. for admission to the course of lectures.

Physiology.—This is an exceedingly valuable subject to take up. Of course it can only be treated of in its elementary stage, and the pupils prepared for the examination provided by the Code.

English Literature.—A standard English novel, of moderate length, such as "Mary Barton," may be read with advantage.

The composition may consist of notes of the lectures on sick-nursing, to be carefully revised by the teacher.

Prizes and Certificates.—The following scheme of prizes has been found to work satisfactorily:—

*1. A prize of the value of 3s. will be given to those pupils, being over 21 years of age, who make at least 50 attendances during the session.

---

* Pupils over 21 years of age are not eligible for examination by H.M. Inspector, but their attendance should be encouraged.

2. A prize of the value of 3s. will be given to those pupils, being under 21 years of age, who fulfil the following conditions, viz.: (*a*) Make at least 50 attendances during the session. (*b*) Are present at the examination and pass in two subjects. (*c*) Make at least 20 attendances in the subject of cookery.

3. A prize of the value of 2s. will be given to those pupils, being under 21 years of age, who make at least 50 attendances during the session, and are present at the examinations.

Certificates should also be given for attendance at the Cookery Classes where an examination in theory is not possible. It would be preferable however to make the award of the certificates depend upon the proved possession of knowledge. Certificates should also be awarded for dressmaking, laundry work, and sick-nursing where examinations can be held.

Examinations.—Pupils under 21 years of age may be presented at H.M. Inspector's examination in the subjects taught. If possible, arrangements should be made for an examination to be conducted by some recognised authority in the subjects of dressmaking, cookery, laundry work, and sick-nursing. The examination in dressmaking should be a practical one. The following plan is suggested for such an examination: On a given night, at the end of the session, the pupils desirous of sitting, to attend, each with her paper pattern of a bodice, and suitable material and sewing requisites. In the presence of the superintendent of the examination the candidates to cut out their bodices in whatever fabric they like to bring, and tack the same together. After the examination, which should occupy two hours, the work, each with its distinguishing number fastened on (these numbers to correspond with a numbered list of the examinees), to be collected and forwarded to a skilled dressmaker (appointed as examiner), who shall then examine each bodice as to fit, and declare which of the candidates are worthy of a certificate. A few special prizes might be awarded for conspicuous merit. The examination in cookery, laundry work, and sick-nursing must necessarily be of a theoretical character.

Exhibitions of Work.—In order to encourage the pupils to take a keen interest in the various kinds of work taught at these institutes it will be found a capital plan to hold each year about Christmas an exhibition of women's work. A schoolroom of good size may be utilised for the purpose. The desks must be cleared away for the occasion, and the various exhibits shown on stalls arranged round the room. The cookery dishes will appear to advantage on tables arranged at one end of the room. The various stages of dressmaking will occupy one stall, laundry work of various kinds another, hats, caps, and bonnets will occupy the stall for millinery, and plain and fancy needlework may be grouped together as an exhibit of domestic economy. Plants and flowers, when obtainable, will considerably add to the attraction of the room, and the bareness of the school walls will be considerably relieved by draping the windows with curtains. The exhibition may be open during the day and evening, the admission to be without charge on presentation of tickets, which, during the preceding week, should be well distributed at the houses within easy reach of the school where the exhibition is held.

Four such exhibitions were held at Christmas, 1891, in connection with our institutes in Manchester, and proved a great success, being attended by some thousands of visitors. The exhibition should be formally opened, if possible, by a lady of position, and every possible encouragement given to the deserving pupils of the institute.

There need be little expense incurred, as the whole of the exhibits will, with the exception of the cookery, be contributed by the pupils, and the various dishes, meats, cakes, &c., will find a ready sale during the day, to be taken away at the close of the exhibition. I append a detailed list of the various articles shown at one of these exhibitions, and if only as an admirable means of making known the advantages to be gained by attending the institutes I would strongly recommend all committees who undertake this kind of instruction to try the experiment of such an exhibition of work as I have described.

EXHIBITION OF WOMEN'S WORK.

LIST OF EXHIBITS.

DRESSMAKING.—Patterns will be shown: (1) Drafted; (2) cut out in paper; (3) cut out in lining and material and tacked together; (4) bodices finished; (5) dresses finished.

LAUNDRY.—Shirts, collars and cuffs, underlinen, laces, aprons, coloured and white ties, ribbons, &c.

MILLINERY.—Hats, bonnets, caps, children's bonnets, &c.

PRACTICAL COOKERY.

SOUPS.—Tomato, lentil.

FISH.—Haddock (stuffed and baked). Lobster patties.

COLD-FISH COOKERY.—Russian pie, fish cakes, &c., fish pudding.

COLD-MEAT COOKERY.—Curried cold meat, rissoles, Durham cutlets, cottage pie.

FOWL, &c.—Roast ducks, bechernal chickens, rabbit pie, galantine of veal.

JOINTS, &c.—Roast beef, ham (ornamented), tongue (ornamented), rabbit (roasted).

PUDDINGS, PIES, &c.—Plum pudding, mince pies, Snowdon pudding ratafia custard, fruit pies, open tart.

SALAD.—Lobster.

JELLIES, &c.—Lemon jelly, jelly (in two colours), blanc mange (isinglass), blanc mange (corn flour), vanilla cream, Charlotte Russe, custard in cups, jelly in glasses.

CAKES, &c.—Rich plum cake (ornamented), rich sponge cake (in mould), rich sultana cake (in mould), rich seed cake (in mould), rich plum cake (in mould), plain seed cake, plain plum cake, lemon cheesecakes, Welsh cheesecakes, Swiss roll, preserve sandwiches, preserve fritters, almond cheesecakes, Naples biscuits, short bread.

BREAD.—Plain bread, scones, breakfast roll.

Hints on General Management.—I think little need be added to the full directions already given. A genuine and practical interest must be evinced in the pupils. The attendance of adult pupils, among whom there is likely to be a goodly number of married women, encouraged, and so long as all the pupils behave well, which they are sure to do in a well-managed institute, the discipline must not be too strict. Any attempt to make the institute too much of a school will sure to be fatal to its best interests. Although regular attendance should be encouraged, the pupil who can only attend once or twice a week must not in consequence be looked askance at. It must be remembered that other ties and other duties will, in many cases, prevent a more frequent attendance. Pupils must be left a free hand in the choice of subjects they may take up, and the teaching, as far as possible, must be adapted to the individual difficulties of the members of the various classes. A very pleasing feature connected with these institutes in Manchester has been the gathering together for instruction of women from homes widely divergent in class and character. The High School girl, the daughters of clergymen and professional men, the shop girl, the workman's wife, the sempstress and employe of the workshop, may be seen side by side in the various classes, all the better each of them for their happy association in useful work.

Fees.—The following are the fees charged in the institutes conducted by the Manchester School Board: Inclusive fee for the whole session (September to March) 5s., or 4d. per week.

Code Requirements.—If the institute is to receive recognition for annual grants the ordinary rules affecting Elementary Evening Schools must be observed. Only for some of the subjects can grants be earned, but I would strongly recommend that as far as possible the pupils should be encouraged to attend the annual examination conducted by H.M. Inspector.

Teachers.—The institute must be directed by a thoroughly competent head teacher, known in our Manchester Institutes as the Lady Superintendent, who should be a competent teacher of the various kinds of manual instruction undertaken, viz., laundry work, dressmaking, and cookery. The teachers of the various classes must be thoroughly proficient in their various subjects. All other things being equal, I prefer teachers of public Elementary Schools who have qualified themselves for taking up the special subjects undertaken by these institutes. In all large centres classes can be held during the summer months for lady teachers of public Elementary Schools desirous of obtaining qualifications to teach cookery, dressmaking, and laundry work.

Grants.—There are no grants from the Education Department for laundry work (in Evening Schools), dressmaking, millinery, or proficiency in sick nursing. The remainder of the subjects already enumerated as suitable for the institutes are capable of earning grants, and, of course, there is the grant for average attendance. These institutes are eligible for grants under the Technical Instruction Acts so far as the instruction outside the standards is concerned.

Balance Sheet.—The following will show the approximate cost of a session's work of an Evening Institute for women and girls, attended by 250 pupils. No very large amount of grant can be looked for from the Education Department. Many of the pupils will be over 21 years of age, and consequently not eligible for grants, and very few of those eligible will be able to earn grants in more than two or three subjects.

Account of Income and Expenditure of an Evening Institute for Women and Girls for the session ended March 25, 1892, showing the amount actually received and actually disbursed during the session.

INCOME.	£	s.	d.
Government Grant	20	0	0
Fees............................	46	4	6
Books, Apparatus, &c.	17	19	2
Cookery Dishes Sold.........	21	3	2
Examination Fees............	2	7	0
Technical Instruction Grant	281	19	1
	£389	12	11

EXPENDITURE.	£	s.	d.
Salaries of Teachers and Lecturers	224	7	5
Books, Apparatus, &c.	55	10	4
Fuel and Light	10	0	0
Furniture and Repairs	65	8	10
Cookery Materials	31	19	4
Examination Fees............	2	7	0
	£389	12	11

The Institute of which the foregoing is the balance sheet was open five nights per week—September to March—and the expenditure includes some initial charges for books and furniture, &c., which would be unnecessary for a subsequent session. Had the Institute only been open three nights per week, and not debited with the first cost of the books and additional furniture, the balance to be met by the Technical Instruction Grant would be reduced from £281 19s. 1d. to £120 for the session.

CHAPTER V.

SCIENCE AND ART EVENING SCHOOLS.

THE growth of science and art instruction, largely in Evening Schools and Classes, has been very great of late years. The following figures give eloquent testimony of the amount of money paid out of Parliamentary grants during the past ten years to the Schools (Day and Evening) giving instruction under the direction of the Science and Art Department :—

	Science.		Art.		
Year.	Pupils.	Grants. £	Pupils.	Grants. £	Total Grants. £
1882	63,592	45,376	55,044	23,784	69,160
1883	67,328	45,937	54,830	26,376	72,313
1884	74,893	56,533	57,871	29,240	85,773
1885	78,675	63,364	60,732	33,111	96,475
1886	96,326	73,142	65,620	37,229	110,372
1887	103,688	84,375	74,701	35,331	119,706
1888	112,808	85,562	77,364	38,658	124,221
1889	131,313	93,797	88,969	34,456	128,254
1890	133,821	103,453	88,833	34,859	138,313
1891	148,408	102,570	100,031	43,785	146,355

In a well-organised system of evening instruction the Science and Art Evening Schools will be largely fed by youths from the ordinary Continuation Schools, and pupils in the latter should be specially instructed in the specific subjects, and drawing, in order that they may be prepared for the stages of the subjects taught in the Science and Art Evening Schools. The large percentage of failures in elementary stages at the May Examinations of the Science and Art Department very clearly shows that there is great need for a more thorough instruction in the primary knowledge of those who sit for the examinations. The passing of the Technical Instruction Acts and the recent liberal provision of public money voted by the various local authorities in all parts of the country should, however, prove the means of considerable improvement being effected. The old-fashioned Science Class, which was largely the speculation of the teacher, is rapidly becoming a thing of the past, and a new order of things is coming about. In connection with this, I cannot do better than quote the remarks of an able and experienced Inspector of Science and Art Schools (Mr. J. C. Buckmaster), which appear in the Thirty-eighth Report of the Department of Science and Art issued in 1891 :—

> "Throughout England and Scotland science instruction has of late years undergone, or is still undergoing, a most vital change of condition. The isolated science class or collection of classes under teachers, each of whom was interested individually and directly in the pecuniary success of his own class, is gradually being superseded by powerful and active centres worked on definite educational lines, with teachers whose direct interest in the grants has been wholly or in part replaced by the payment of fixed salaries. Among the places where this change has occurred, Manchester deserves special mention, but many of the more important towns are working on similar lines.
>
> "The Evening Classes under the Manchester School Board are now organised in a most satisfactory manner. The various sporadic classes have been grouped into six centres. At each of these centres a head master for the evening work has been appointed, and the general management and organisation of the classes been entrusted to him. Assistant teachers have been obtained for the various subjects taught, and every opportunity given for good teaching. None of the masters have the least direct pecuniary interest in the grant, the whole financial responsibility resting on the Board. Each of the six centres possesses a chemical laboratory, and at four of the newer schools suitable lecture tables for experimental work have been supplied; while similar, or even better, accommodation will be provided in the new buildings which the Board hope to erect in connection with the other two centres. In addition to the Science and Art work, classes on commercial subjects under the Technical Instruction Act are at work at some of these centres. Lectures in

higher or special branches of studies are occasionally given, and, in addition, some ninety schools or departments have been opened to provide evening instruction in the elementary subjects of the Education Department. The classses of all kinds seem to have opened very favourably as regards attendance. Thus, to mention one class at random, from one of the least known centres—I found more than 200 students in machine construction at Birley Street; the class on this subject being held every evening, except Saturday, for two and a half hours each evening. In fact, the evening work now undertaken by the Board includes between 15,000 and 16,000 persons in the three divisions of elementary, commercial, and science instruction.

"Arrangements as complete and successful as these, carried out on lines which I have advocated, here and elsewhere, for years past, will naturally require time to produce their full effect. The experiment will, no doubt, be watched with interest by the Department.

"The widespread movements in organisation in Manchester and elsewhere have greatly facilitated the adoption of the Technical Instruction Act. In the course of my duties I have had frequent opportunities of meeting town councils and other local authorities who were desirous of adopting the Act. In the great majority of cases the existing Science and Art Institutions are being made the nucleus of the additional instruction to be given under the Act, thus utilising the resources already provided in the most economical manner. It is only where the local Science and Art Classes are without any definite and permanent status that local authorities appear anxious to start entirely new organisations of their own.

"The additional financial support thus obtainable under the Technical Instruction Act will also do much to reduce the difficulties met with in many large institutions in carrying on a large number of classes, many of which must entail expenditure for which little or no remuneration in the shape of fees or grants can be obtained.

"The number of laboratories have increased during the past two years. I have visited many of the new ones in the usual course of work. The schools visited during the past year have included a large number in Ulster. I wish I could speak as well of their organisation or teaching as of similar schools in Scotland or England."

Schemes of Instruction.—The scheme of instruction at any Science and Art Evening School must, in its arrangement, largely depend upon the needs of the pupils who may attend. In Manchester we have one Central Science and Art School, at which instruction is given in nearly all the subjects embraced in the syllabus of the Science and Art Department, and where provision is made for advanced work; we have ten other centres, with varying groups of subjects suited to the industries of the localities, the instruction at these centres being mainly in the elementary stages. Given a town or district sufficiently large and compact, probably this is as good an arrangement as could be adopted; but in small towns and villages requiring provision for such instruction one school would have to suffice. The following particulars relate to the schools with which I am connected, and are issued each session for the information of pupils desirous of joining the schools:—

At each of these Science and Art Evening Schools pupils may for a moderate fee receive instruction in the subjects given under the head of each centre. The schools will be open five evenings of each week during the session, and pupils may attend all the classes in each subject taken up by them at the school. Although pupils may join for single subjects, yet all who are able are strongly recommended to take up the organised course of instruction, and the inclusive fees have been so arranged as to encourage this.

The head masters of the Science and Art Schools will exercise a constant supervision of the various classes, will advise pupils on courses of study to be pursued, and will be pleased to furnish reports on the attainments of pupils.

Each Science and Art School will be supplied with an adequate staff of teachers of the various technical subjects taught, and the class time tables have been so arranged as to allow of pupils taking up those subjects which are naturally allied.

Laboratories for practical chemistry have been fitted up at each of the Science and Art Schools.

The Science and Art Schools will be conducted in accordance with the Regulations of the Science and Art Department, South Kensington, and the instruction given in the various subjects will generally follow the syllabus contained in the Directory of that Department. All the classes will be fully provided with whatever appliances and apparatus are requisite to make the teaching intelligent, interesting, and effective.

Students who join the Science and Art Schools should attend as regularly as possible, and in every case of absence a written explanation of the cause will be expected by the head masters.

The elementary course in chemistry, mechanics, sound, light, and heat, and magnetism and electricity, and the first stage in mathematics, will be found to be of considerable assistance to students preparing for the London Matriculation Examination.

A room at the Central School has been specially fiited with the necessary appliances for the objective teaching of animal physiology, biology, and natural history subjects. Arrangements will also be made in connection with these subjects for lending to students, for home study, type specimens, anatomical preparations, microscopic slides, and books of reference.

Attention is particularly called to the following conditions on which tickets are sold for the Science and Art Schools :—

1. That the holder make not less than twenty attendances at each class attended, and sit for examination in those subjects in which he has received instruction, as directed by the Head Master.

2. That failing without reasonable excuse to make the minimum number of attendances he shall not be permitted to sit for the examination, and shall be excluded from attendance at the classes in the following session, except on payment of 10s.

3. That having made the requisite attendances, but having failed without reasonable excuse to attend the examination, he shall likewise be excluded from attendance at the classes in the following session, except on payment of 10s.

All the Science and Art and Special Classes are open to male and female students.

Pupils taking up courses of instruction for the inclusive fee must accept the decision of the head masters as to number and choice of subjects.

The Board desire to impress on students proposing to join these classes the importance of doing so at the beginning of the session, and of attending regularly and punctually.

TIME TABLE.

EVENING SCIENCE AND ART SCHOOL.

Evenings.	Hours.	Subjects.
Monday	7 to 8	Chemistry—Inorganic, Theoretical
„	7 to 8-15	Geometry—Plane (Section I.)
„	7 to 8-15	Mechanics—Applied
„	7 to 8-15	Animal Physiology
„	7 to 9-30	Machine Construction and Drawing
„	7 to 9-30	Arithmetic
„	8 to 9-45	Chemistry—Inorganic, Practical
„	8-15 to 9-30	Mathematics
„	8-15 to 9-30	Geometry—Solid
„	8-15 to 9-30	Steam
Tuesday	7 to 8	Chemistry—Inorganic, Theoretical
„	7 to 8-15	Mathematics
„	7 to 8-15	Steam
„	7 to 8-15	Sound, Light, and Heat
„	8 to 9-45	Chemistry—Inorganic, Practical
„	7 to 9-30	Machine Construction and Drawing
„	7 to 9-30	Geometry—Practical Plane and Solid
„	8-15 to 9-30	Mechanics—Applied
„	8-15 to 9-30	Magnetism and Electricity
„	8-15 to 9-30	Arithmetic
Wednesday	7 to 8-15	Drawing—Freehand
„	7 to 9-30	Machine Drawing—Inking and Colouring
„	7 to 9-30	Geometry—Inking
„	7 to 9-30	Arithmetic
„	8-15 to 9-30	Drawing—Model
Thursday	7 to 8	Chemistry—Inorganic, Theoretical
„	7 to 8-15	Geometry—Plane (Section I.)
„	7 to 8-15	Mathematics
„	7 to 8-15	Mechanics—Applied
„	7 to 9-30	Machine Construction and Drawing
„	8 to 9-45	Chemistry—Inorganic, Practical
„	8-15 to 9-30	Steam
„	8-15 to 9-30	Geometry—Solid
„	8-15 to 9-30	Animal Physiology
Friday	7 to 8-15	Drawing—Model
„	7 to 8-15	Magnetism and Electricity
„	7 to 8-15	Steam
„	7 to 9-30	Machine Construction and Drawing
„	7 to 9-30	Geometry—Practical Plane and Solid
„	7 to 8-15	Arithmetic
„	8-15 to 9-30	Mechanics—Applied
„	8-15 to 9-30	Sound, Light, and Heat
„	8-15 to 9-30	Drawing—Freehand
„	8-15 to 9-30	Mathematics

Rules and Regulations of the Science and Art Department.—These are fully set forth in the Directory published each year by the Science and Art Department. The following are the regulations specially affecting Evening Science and Art Schools. (The numerals at the end of each paragraph refer to the sections contained in the Science and Art Directory, 1892):—

FORMATION OF COMMITTEE.

A Local Committee must be formed consisting of chairman, secretary, and at least three other members. The offices of chairman and secretary must not be held by the same person. The Department corresponds, as a rule, with the secretary. A School Board or Local Authority under the Technical Instruction Act may be such a Committee. This Committee must sign Form 88, and the form must be sent to the Department before Oct. 31st. Changes in the personnel of the Committee must be at once reported to the Science and Art Department. If the same Committee continue to act next year, Form No. 168 must be signed and forwarded. (IX., X. abridged.)

SUMMARY OF DUTIES OF COMMITTEE.

The Department requires that the Local Committee shall—

(*a*) Provide and maintain a room or rooms for the class instruction, with firing and lighting, together with such apparatus and examples as are required to illustrate the instruction. Be responsible for the safe custody on the school premises of all apparatus and examples towards the purchase of which the Department has granted aid, or which it has been lent.

(*b*) Provide a room or rooms of sufficient size to carry out the annual examination according to the detailed regulations prescribed in the Science and Art Directory. To this examination ALL persons who wish to present themselves, and not only those attending the school or class, must be admitted, provided that they have given due notice according to the rules. Persons who do not belong to the school or class may be required to pay the authorised fee for each subject in which they register their names for examination.

(*c*) Frequently visit the school during the attendance of the Science and Art Classes, sign the attendance register and enter in it the number of students present, and take care that the school registers (Science and Art Forms Nos. 486, 486A, and 486B), showing the occupations of the students, their attendances, payment of fees, &c., are kept from day to day, in accordance with the regulations in Form No. 1,069, and sent to the Department of Science and Art, together with the claim for payment on the results of the examinations.

(*d*) Send to the secretary of the Department, to the special local secretary, or to secretary of the Amalgamated Committee (in Form No. 119 or Form No. 1,010), a list of the students to be examined, specifying the subjects in which they are to be examined; superintend, if required, the examinations in accordance with the rules of the Department; give out the examination papers which will be sent for that purpose; see them fairly worked, and certify the same, the number of members of the Committee required by the regulations to act as superintendents being ALWAYS present; and send the worked papers, under seal, by the day's post to the secretary of the Department. When a special local secretary is appointed by the Department, the Committee is relieved of a part of this work. (*See Science and Art Directory, § XXX.)

(*e*) When required, transmit to the Department for examination works executed in the school or class during the previous year, and make an annual report of its proceedings.

(*f*) Certify that the students, on the result of whose examination claims for payment are made, belong to the industrial classes as defined by the Science and Art Directory, § XL., and that the payments claimed are due according to the regulations.

(*g*) Certify that during the session the required number of lessons have been given in each subject by a duly-qualified teacher, and that all students on account of whose instruction payments or prizes are claimed have received at least 20 such lessons since the last examination at which they were successful, each lesson being an attendance at a meeting of the class of at least an hour's duration on a separate day. That 20 lessons have been given since the last examination in the subject at which the candidate was successful, within two years immediately preceding the examination on account of which the claim is made, and under the supervision of this Committee.

---

* Local Committees desirous to appoint a special local secretary for conducting the Science and Art examinations in the town or district in which they are situated should apply to the Department before the 14th February.

(*h*) Undertake that the school, with all its apparatus and examples, shall be at all times open to the visit and inspection of the officers of the Department.

The school or class will be inspected periodically by an officer of the Department, who will report whether the regulations are strictly carried out. A meeting of the Committee must be held to receive the inspector if he should so require in giving notice of his visit. At such meeting as many of the members as possible are expected to attend. (Form 88, Science and Art Department.)

The school or class will have a distinguishing "school number" assigned by the Department, and the number must be quoted in all forms and correspondence. (XI.)

Every school or class must on its formation and annually, before the 1st of October, make a return on Form No. 120 of its teaching staff, with the time table of instruction for the current session; of its sources of maintenance, and in the case of an old school or class, of the statistics for the past session. (XXI.)

REGULATIONS.

That portion of the income of the school which is derived from instruction in science or in art must be applied wholly for the purpose of such instruction, and the Local Committee must provide and maintain suitable rooms for the instruction and for the examinations, with firing, lighting, apparatus, examples, &c. The managers of an Elementary School under the inspection of the Education Department may permit their premises to be used for a Science School or Art Class, provided that the arrangement be not allowed to interfere injuriously with the primary purposes of such Elementary School. (XIII. abridged.)

After the 31st December, 1891, grants for fittings, apparatus, and examples, will be suspended, except in Ireland, while the Local Taxation (Customs and Excise) Act, 1890, continues in force. (XV.)

Qualification of Teachers.—In order to claim payments on results and prizes, the teacher of a school or class must be qualified in accordance with the rules laid down in Science and Art Directory, pp. 27 to 29 (Science) and pp. 63 to 68 (Art). (For summary see Manual, pp. 125-128.)

Number of Lessons Necessary.—The class in each subject of science or group of subjects of art must meet under the instruction of a qualified teacher on at least 28 days during the session, each meeting being of at least one hour's duration on a separate day. Should less than 28 lessons have been given during the session, the claim for payment on results will only be considered under very exceptional circumstances, and payments, if made at all, will be proportionately reduced. (XX. abridged.)

REGISTRATION OF STUDENTS.

Registers.—A general register must be kept in accordance with the instructions in Form No. 1069 for each Science or Art School or Class, and an attendance register for each subject taught. (XXII.)

Visits of Members of Committee.—The Committee are responsible for the accuracy of the registration, and no grants will be made or prizes allowed unless the registers are properly kept and certified. A member of the Committee visiting the school should record, in the space provided in the attendance register, the number of students who are present at the time of his visit, and should certify the entry with his signature and the date. (XXIII.)

Instructions for Keeping Registers.—N.B.—Unless these instructions are strictly observed the grant may be reduced or withheld.

All registers must be kept on the school premises, and be always available for inspection by the Committee or by the inspector of the Department.

THE GENERAL REGISTER.—REGULATIONS FOR SCIENCE AND ART.

1. In this register (Form No. 486) the name, autograph signature age, address, occupation, and previous success (if any) of every

student must be entered, in ink, immediately on his joining the Science or Art school or class. The list of the Local Committee should also be entered and kept up to date.

2. This register must be sent, with the claim for payments on results, to the secretary of the Department, who will return it to the secretary of the Local Committee, after examination, provided Form No. 120, for another session, has been sent to the Department.

3. When this register is returned to the school, successes which students may have obtained subsequently to the entry of their names must be duly posted up against that entry. A student will thus retain the same identifying number in this register during all the sessions in which he may belong to the classes.

4. The register is to be kept on from year to year, and a fresh copy should only be applied for when there is insufficient space in the old register for the requirements of the current session. A new general register must be commenced with the number next to that with which the old general register concluded. The old and new general registers will both continue in use, the new students' names, &c., entered in the new general register, and the record of the old students continued in the old general register.

5. The general register must be kept on the school premises, and be always available when the inspector or members of the Committee visit the classes and the examinations.

THE ATTENDANCE REGISTER.—REGULATIONS FOR SCIENCE AND ART.

6. The student's number in the general register must be repeated against his name in the attendance register; the numbers in the general register are required to be *consecutive,* and the numbers in the attendance register will *not* necessarily be consecutive.

7. The attendance of every student must be registered and the record of his attendance or absence must be entered next to the last lesson recorded. No blank columns may be left. In cases where there is insufficient space in the attendance register to record attendance at all the lessons which are to be given during the session,

the Department will, on application, supply interleaves for the attendance register.

8. Members of the Committee who visit the classes should record on the front of the attendance register the number of students present, attesting the same by their dated signatures; they should also see that the registers are properly kept.

9. The attendance register may be used for one session only, and is retained by the Department; it must accompany the general register when the claim is sent to the Department. When Form No. 120 is received a fresh attendance register will be issued, and as the arrangements for the session on Form No. 120 are not necessarily final, they can be varied with the sanction of the Department.

10. The Secretary of the Local Committee, when forwarding the attendance register to the Department, is requested to retain a memorandum of such information as he will require in order to fill up the annual report, Form No. 120.

REGULATIONS FOR SCIENCE ONLY.

11. A separate copy of Form No. 486*a* must be used for each subject of science taught, and for each Division *a* and *b* of Subject VI., and *a*, *b*, and *c* of Subject VIII.

Practical inorganic chemistry (Science Subject X*p*), practical organic chemistry (Science Subject XI*p*), and practical metallurgy (Science Subject XIX*p*), are each treated as a separate subject. Attendance at instruction in these subjects must not be recorded in registers used for inorganic chemistry (Science Subject X.), organic chemistry (Science Subject XI.), and metallurgy (Science Subject XIX.).

Lessons may not be registered in more than two subjects of science for a student on any one day, except on Saturdays, when lessons in three subjects may be registered.

No student may be recorded more than once upon any one day as present at instruction in any one science subject.

12. The presence or absence of each student must be entered IN INK during the actual meeting of the class; his presence is to be indicated by the letter "p" and his absence by the letter "a"; and no student may be recorded as present, unless his attendance at the lesson in question extends over a full hour and a half in practical chemistry or practical metallurgy, or over a full hour in any other subject. The total number of students present at each meeting of the class must be entered at the foot of that column in which their attendance for the day is recorded, and such entry is to be made when the register is marked, and to be verified by the teacher's initials; subsequent posting up of attendances or of totals is prohibited.

REGULATIONS FOR ART ONLY.

13. A single copy of the Form No. 486*b* must be used to record the attendances of students who are receiving instruction in art. When necessary, interleaves will be supplied on application.

14. Lessons must not be registered in more than two of the following groups of subjects for a student on any one day except on Saturdays, when lessons in three groups of subjects may be registered, and no student may be recorded more than once on any one day as present at instruction in any one group. For registration purposes the subjects are grouped as follows:—

Group A. Drawing.	Group B. Architecture.	Group C. Theory and Designing.
Freehand drawing of ornament (subjects 2*b* and 3*b*).	Architecture (subject 1*d*).	Principles of ornament (subject 22).
Model drawing (subjects 3*a* and 5*a*).	Architectural design (subject 23*b*).	Historic ornament (subject 22*d*).
Drawing in light and shade from a cast (subject 5*b*).	Perspective (subjects 1*c* and 1*e*).	Design (ornament). (Elementary and advanced stages, subject 23*c*).
	Mechanical drawing (subjects 1*b* and 23*a*.)	

Group D. Painting.	Group E. Study of the Figure.	Group F. Modelling.
Painting ornament in monochrome (subject 11*a*). Painting from still life (subject 15).	Anatomy (subject 9). Drawing and painting from the life (subjects $8c^2$ and 17*c*). Drawing and painting from the antique (subjects 8 and 16). Design (ornament); (honours, subject 23*d*).	Modelling (elementary stage, subject 18*a*). Modelling design (elementary and advanced stages, subject 23*e*, and honours, subject 23*f*). Modelling from the life (subject 19*l*). Modelling from the antique (subject 19*i*).

15. The presence of a student must not be entered until he has given at least a full hour's attendance, and then the entry must be made in INK, during the actual meeting of the class. The absence of a student must be entered at the last meeting of the class on that day, when the total number of students present during the day is to be made up and initialed by the teacher giving the instruction. Subsequent posting up of attendances or of totals is prohibited.

16. In the art attendance register (Form No. 486*b*) the presence of a student must be recorded by the Roman capital of the group A, B, C, D, E, or F, in the subjects of which he is on that occasion receiving instruction; his absence must be recorded by the small letter "*a*." When a student is under instruction in three groups on Saturday or in two groups on other days, the letters of those groups will be placed against his name in the dated column for the day, *e.g.*, $\begin{array}{c}\text{A}\\ \hline \text{D}\\ \hline \text{F}\end{array}$ or $\begin{array}{c}\text{C}\\ \hline \text{E}\end{array}$ (Form 1,069, S. and A. Dept.)

Subjects of Instruction.—Science.—Aid is given towards instruction in the following subjects of science:—

1. Practical plane and solid geometry.
2. Machine construction and drawing.
3. Building construction.
4. Naval architecture.
5. Mathematics.
6. Theoretical mechanics. (*a*) Solids. (*b*) Fluids.

7. Applied mechanics.

8. Sound, light, and heat,* elementary stage. (*a*) Sound—advanced stage, and honours. (*b*) Light—advanced stage, and honours. (*c*) Heat—advanced stage and honours.

9. Magnetism and electricity.*

10. Inorganic chemistry (theoretical).

10*p*. Inorganic chemistry (practical).

11. Organic chemistry (theoretical).

11*p*. Organic chemistry (practical).

12. Geology.*

13. Mineralogy.

14. Human physiology.*
15. General Biology.
16. Zoology.
17. Botany.
18. Principles of mining.
19. Metallurgy (theoretical).
19*p*. Metallurgy (practical).
20. Navigation.
21. Nautical astronomy.*
22. Steam.
23. Physiography.
24. Principles of agriculture.*
25. Hygiene.

The subjects are subdivided into stages or courses — the elementary, the advanced, and honours—with the exceptions shown in the syllabus, pp. 143 to 253 of Science and Art Directory. In the subjects marked with an asterisk there may be a practical as well as a written examination in honours.

Syllabuses of the foregoing may be obtained from the Science and Art Department, price 1d. each or 6d. per dozen.

Art.—Aid is given towards instruction in the following subjects of art :—

Subject 1. *Linear Drawing by Aid of Instruments.*—(1*a*) Linear geometry (including problems in practical plane and solid geometry and graphic statics). (1*b*) Machine and building construction and naval architecture—drawings from copies. (1*c*) Linear perspective. (1*d*) Architecture—drawings from copies. (1*e*) Sciography.

Subject 2. *Freehand Outline Drawing of Rigid Forms from Flat Examples.*—(*a*) Objects; (*b*) ornament (showing elementary principles of design).

Subject 3. *Freehand Outline Drawing from the "Round."*—(*a*) Models and objects; (*b*) ornament.

Subject 4. *Shading from Flat Examples.*—(*a*) Models and objects; (*b*) ornament.

Subject 5. *Shading from the "Round" or Solid Forms.*—(*a*) Models and objects; (*b*) ornament; (*c*) drapery; (*d*) time sketching and sketching from memory.

Subject 6. *Drawing the Human Figure, and Animal Forms, from Flat Examples.*—(*a*) In outline; (*b*) shaded.

Subject 7. *Drawing Flowers, Foliage, and Objects of Natural History from Flat Examples.*—(*a*) In Outline; (*b*) shaded.

Subject 8. *Drawing the Human Figure, or Animal Forms, from the "Round" or Nature.*—(*a*) In outline from casts; (b^1) shaded (details); (b^2) shaded (whole figures); (c^1) studies of heads from the life; (c^2) studies of the human figure from nude model; (*d*) studies of drapery arranged on figure from antique or on the living model; (*e*) time sketching; (*f*) sketching from memory.

Subject 9. *Anatomical Studies.*—(*a*) Of the human figure; (*b*) of animal forms; (*c*) modelled from flat or examples in the round or relief; (*d*) modelled from Nature.

Subject 10. *Drawing Flowers, Foliage, Landscape Details, and Objects of Natural History, from Nature.*—(*a*) In outline; (*b*) shaded.

Subject 11. *Painting Ornament from Flat Examples.*—(*a*) In monochrome; (*b*) in colours, either in water-colour, tempera, or oil.

Subject 12. *Painting Ornament from the Cast, &c.*—(*a*) In monochrome, either in water-colour, oil, or tempera.

Subject 13. *Painting from Flat Examples, Flowers, Still-life, &c.* (*a*) Flowers or natural objects, in water-colour, in oil, or in tempera; (*b*) landscapes, or views of buildings.

Subject 14. *Painting Direct from Nature.*—(*a*) Flowers, or still-life, in water-colour, oil, or tempera without back-grounds; (*b*) landscapes or views of buildings; (*c*) drapery.

Subject 15. *Painting* (*from Nature*) *Groups of Still-life, Flowers, &c. as Compositions of Colour.*—(*a*) In oil colour; (*b*) in water-colour or tempera; (*c*) in monochrome, or light and shade.

Subject 16. *Painting the Human Figure or Animals in Monochrome from Casts.*—(*a*) In oil, water-colour, or tempera.

Subject 17. *Painting the Human Figure or Animals in Colour.*—(*a*) From the flat or copies; (*b*) the head or draped figure from Nature; (*c*) the nude figure from Nature; (*d*) time sketches.

Subject 18. *Modelling Ornament.*—(*a*) From details, such as single ornamental devices, scrolls, &c.; (*b*) from casts of ornamental compositions for pilasters, friezes, &c.; (*c*) from drawings or photographs; (*d*) time sketches from examples; (*e*) modelling from memory.

Subject 19. *Modelling the Human Figure or Animals.*—(*a*) From hands, feet, &c.; (b^1) from heads or masks from the antique in the round; (*i*) in relief; (b^2) from the antique figure in the round; (*k*) in relief; (*c*) from drawings; (*d*) the head from Nature (busts); (*l*) in relief; (*e*) the nude figure from Nature in the round; (*h*) in relief.

Subject 20. *Modelling Fruits, Flowers, Foliage, and Objects of Natural History, from Nature.*

Subject 21. *Time Sketches in Clay of the Human Figure, or Animals, from Nature.*

Subject 22. *Elementary Design.*—(*a*) Studies treating natural objects ornamentally; (*b*) ornamental arrangements to fill given spaces in outline, monochrome or modelled; (*c*) ornamental arrangements to fill given spaces in colour; (*d*) studies of historic styles of ornament, drawn or modelled; (*f*) drapery from actual stuffs, and not from casts; (*g*) modelling from memory.

Subject 23. *Drawings from Actual Measurements of Structures, Machines, &c., Applied Designs, Technical or Miscellaneous Studies.*—(*a*) Architecture and building construction—drawings from *actual measurements*, taken by the student, of existing structures; (*b*) architecture and building construction—*original designs*; (*c*) ornamental design as applied to decorative or industrial art; (*d*) figure composition, and ornamental design with figures, as applied to decorative or industrial art; (*e* and *f*) the same as 23*c* and 23*d*, but in relief; (*g*) machine construction and naval architecture—drawings from *actual measurements*, taken by the student, of existing machines, ships, &c.; (*h*) machine construction and naval architecture—*original designs.*

The Examinations in Art are—

(*a*) For Elementary Schools, page 86 Science and Art Directory.

(*b*) For Training Colleges, page 94 Science and Art Directory.

(*c*) For Schools of Art and Art Classes, pages 69-73 Science and Art Directory.

SCIENCE INSTRUCTION.

PREMISES, FITTINGS, AND APPARATUS.

Chemical Laboratories.—The requirements of the Science and Art Department can be all complied with at a moderate outlay, if care is taken with the arrangements, and some amount of practical skill is exercised in the supervision of tradesmen employed in providing the fittings. On the other hand, very considerable and needless expense may be incurred in extravagant fittings, wholly unnecessary, and very often a hindrance to supervision and sound instruction. On pp. 245 to 248 I give detailed drawings of a suitable bench, together with a specification giving details for a laboratory accommodating 48 pupils working at one time. Many years' experience has proved the value of the bench shown in the illustration. Whilst everything that is requisite for teaching purposes is supplied, the cost is kept within reasonable limits. With regard to drainage, I would draw attention to the V-shaped trough running the whole length of the benches. By this arrangement stoppages and defects can easily be discovered and remedied, a workman being able to enter at the end of the row of benches for the purpose of repairs, &c. Everything is given in sufficient detail in the Appendix to be self-explanatory. The cost of such a laboratory should not exceed for all internal fittings a gross sum of £160. In some districts the cost may even be less. Of course, the cost of a smaller laboratory will be rather more per place. I have added two internal views of the laboratory to give a clearer idea of the arrangement.

The following are the rules of the Science and Art Department relative to laboratories for practical chemistry:—

Where payments are to be claimed on the results of the instruction in practical chemistry the school must be provided with a laboratory complying with the following requirements, and a certificate that it does so comply must be given by the Committee on page 4 of Form No. 120 (Directory, page 33). No payments will be made in these subjects unless the laboratory has been passed by the inspector as satisfying completely the conditions laid down below.

These conditions must be considered as the minimum if payments are to be claimed. It is not intended as a complete list of the apparatus or reagents required by students in honours, nor even in the advanced stage.

LABORATORY FOR PRACTICAL INORGANIC CHEMISTRY.

The laboratory must be a room or part of a room set apart entirely for the study of practical chemistry. It may not be used as a classroom for any other subjects, but it may, when not required for practical chemistry, be used as a laboratory for practical work in other experimental sciences. The laboratory and apparatus must, under any circumstances, be kept clean, tidy, and in good order—failing which payments may be reduced or withheld. It must be fitted with one or more properly-arranged fume closets, there being one fume closet for every ten benches, and with proper working benches, one of which must be allotted to each student attending the class. Each bench must be at least 3ft. 6in. wide, and 2ft. 3in. deep; it must be provided with a cupboard and drawers for keeping apparatus, and with a rack or set of shelves for the necessary reagents. Between every two benches there must be a basin and sink with tap and water supply, and gas must be laid on to each bench with nozzles for fixing flexible tubes.

Each bench must be furnished with the following apparatus, which must always be kept in good working order, and when not in use kept in the drawers and cupboards of the bench: A Bunsen gas burner, with blow-pipe jet and rose burner, a test-tube stand, two dozen test tubes, test-tube brush, mouth blow pipe, piece of iron wire gauze, six inches of platinum wire, piece of platinum foil, set of three small beakers, a wash bottle, a box of blue litmus paper, retort stand with two rings, or its equivalent, a tripod stand, sand bath, crucible tongs, spatula, two flasks, one porcelain crucible, two porcelain evaporating basins, two funnels, filter papers, triangular and rat-tail files.

Each bench must be supplied with the following chemical reagents, kept in proper stoppered bottles, on the shelves of the working bench: Sodium hydrate, sodium phosphate, sodium carbonate, potassium ferrocyanide, ammonium oxalate, ammonium chloride, ammonium carbonate, ammonium sulphide, ammonium hydrate, barium chloride, calcium sulphate, silver nitrate, lead acetate, sulphuric acid (concentrated), sulphuric acid (dilute), nitric acid (dilute), hydrochloric acid (dilute), sulphuretted hydrogen solution, lime water, borax, fusion mixture, ferrous sulphate (crystals), manganese dioxide, potassium nitrate, lime (powder).

APPARATUS AND REAGENTS FOR GENERAL USE.

A stock of the following apparatus must be kept for the supply of the students: Test tubes (various sizes), boiling tubes, soft glass tubing, combustion tubing, glass rod, thistle funnels, corks (assorted), caoutchouc tubing, large Berlin porcelain evaporating basin, stoppered German glass retorts (various sizes), large glass beakers, flasks (various sizes), gas jars.

The laboratory must also be provided with sufficient of the following apparatus for general use: Wedgwood-ware pestles and mortars, iron pestle and mortar, cork borers, gas or charcoal furnace, a Liebig's condenser, sulphuretted hydrogen apparatus.

One or more sets of the following reagents will also be required for general use: Sodium hypochlorite, potassium ferricyanide, potassium chromate, potassium iodide, potassium sulpho-cyanide, ammonium acetate, ammonium molybdate, ammonium sulphate, mercuric chloride, platinic chloride, magnesium sulphate, stannous chloride, calcium chloride, cobalt nitrate, ferric chloride, acetic acid, tartaric acid, nitric acid (concentrated), hydrochloric acid (concentrated), sulphurous acid solution, barium hydrate, alcohol, ether, hydric potassic sulphate, potassium cyanide, potassium chlorate, starch, microcosmic salt, methylated spirit, charcoal, copper oxide, soda lime.

Where there are students who intend to take honours in the examination in practical chemistry, the following set of apparatus AT LEAST must be provided for every six such students: Two drying ovens, a water bath, an agate mortar, a balance turning with $\frac{1}{100}$ of a grain, a platinum or silver evaporating dish, a platinum crucible.

LABORATORY FOR PRACTICAL ORGANIC CHEMISTRY.

A laboratory fitted up and equipped in accordance with the conditions specified in the case of practical inorganic chemistry (*see* end of Syllabus of X*p*, page 196 Science and Art Directory) may be also used for instruction in practical organic chemistry provided that in addition to the apparatus and reagents prescribed for that subject the following are kept for general use in the laboratory, namely: a combustion furnace, and combustion tubing, and a supply of the usual glass absorption bulbs, measuring vessels, and other appliances commonly employed in organic analysis.

APPARATUS AND REAGENTS.—INORGANIC CHEMISTRY.

The following is a detailed price list of the apparatus and reagents necessary for a chemical laboratory for 48 students. The prices quoted have been submitted for approval to two eminent firms of wholesale chemists engaged largely in the supply of such articles. Where larger quantities than those specified are ordered at one time there would be a reduction in the price of the reagents.

LIST OF APPARATUS AND CHEMICALS REQUIRED FOR A LABORATORY, WITH ACCOMMODATION FOR 48.

Number.	Description.	Price.	£	s.	d.
48	Bunsen burners	1s. 2d. each	2	16	0
1	,, lamp, with rose burner	3s. 9d. each	0	3	9
48	Test-tube stands, 12 holes and 12 pegs	2s. each	4	16	0
48	,, brushes	1s. 6d. per doz.	0	6	0
48	Brass blow pipes, bone mouthpieces	1s. 6d. each	3	12	0
48	Retort stands, 16in., 3 rings	2s. 6d. each	6	0	0
1	,, 20in. ,, and clamp	6s. 6d. each	0	6	6
48	Iron tripods—7×6	10d. each	2	0	0
48	,, sand baths, 6in.	4d. each	0	16	0
48 pairs	,, crucible tongs, 6in.	1s. each	2	8	0
48	Small horn spatulas, 4in.	1d. each	0	4	0
48	⅞in. I. R. bungs, two-holes for 12oz. flask	3s. 3d. per doz.	0	13	0
4	1in. ,, ,,	4s. per doz.	0	1	4
4	¾in. ,, ,,	2s. 3d. per doz.	0	0	9
6	⅝in. ,, ,,	1s. 6d. per doz.	0	0	9
6	½in. ,, ,,	1s. 3d. per doz.	0	0	8
48	Funnels, 2in.	1s. 9d. per doz.	0	7	0
48	,, 3in.	2s 6d. per doz.	0	10	0
1	,, 4in.	4d. each	0	0	4
1	,, 6in.	9d. each	0	0	9
24	Thistle Funnels	2s. per doz.	0	4	0
60 dozen	6oz. N. M. French stoppered bottles	3s. 6d. per doz.	10	10	0
4 ,,	2oz. N. M. ,, ,,	2s. 6d. per doz.	0	10	0
16 ,,	2oz. W. M. ,, ,,	3s. 6d. per doz.	2	16	0
2 ,,	6oz. W. M. ,, ,,	6s. per doz.	0	12	0
1	8oz. W. M. ,, ,,	7d. each	0	0	7
1	1oz. W. M. ,, ,,	3d. each	0	0	3
4 dozen	W. M. bottles for corks, 1 pint	2s. 6d. per doz.	0	10	0
1	,, ,, ,, 1 quart	6d. each	0	0	6
1½ doz.	Stoppered Winchester quarts	6s. per doz.	0	9	0
48 books	Red litmus paper	1s. 3d. per doz.	0	5	0
48 pkts.	3¾in. English filter papers	3s. per doz	0	12	0
48	Porcelain crucibles, 1¼in.	2s. 8d. per doz.	0	10	8
96	,, evaporating basins, No. 00	4s. 3d. per doz.	1	14	0
1	,, basin, 3in.	6d. each	0	0	6
1	,, ,, 4in.	10d. each	0	0	10
2	,, ,, 7in.	2s. each	0	4	0
2	Calcium chloride tubes, 2 bulbs	6d. each	0	1	0
24	Boiling tubes, 7×1	1s. per doz.	0	2	0
1	Hofmann's V tube, on stand	10s. 6d. each	0	10	6
10lb.	Soft glass tubing	1s. per lb.	0	10	0
5lb.	Glass combustion tubing	1s. 4d. per lb.	0	6	8
5lb.	,, rod	1s. per lb.	0	5	0
2 gross	Assorted corks	4s. per gross	0	8	0
3 sets	Cork borers, sets of 4	1s. 4d. per set	0	4	0
3	Stoppered retorts, 4oz.	7d. each	0	1	9
3	,, ,, 8oz.	9d. each	0	2	3
6	Large beakers, 7in.	11d. each	0	5	6
48 48 48	Small beakers ,, ,, ,, ,, } 48 nests beakers, 1-3	10d. each rest	2	0	0
48	Flasks, 4oz.	3s. 9d. per doz.	0	15	0
48	,, 8oz.	5s. 6d. per doz.	1	2	0
8 gross	Test tubes } 4 gro. each; 5×⅝, 5s. 6d. per gro.; ,, ,, } 5×½, 4s. 6d. per gro.		2	0	0
2	Wedgwood pestle and mortar, 3½in.	1s. 4d. each	0	2	8
2	,, ,, ,, 4in.	1s. 8d. each	0	3	4
2	,, ,, ,, 6in.	2s. 9d. each	0	5	6
1	Iron mortar and pestle, 2 pints	5s. each.	0	5	0
1	Stoneware pneumatic trough and shelf	6s. 6d.	0	6	6
6ft.	I. R. Tubing ⅜in.	8d. per foot.	0	4	0
100ft.	,, ,, ¼in.	5d. ,,	2	1	8
6ft.	,, ,, 3/16in.	3d. ,,	0	1	6
6ft.	,, ,, ⅛in.	2d. ,,	0	1	0
48	Triangular files	6d. each.	1	4	0
48	Rat-tail ,,	6d. each.	1	4	0
	Forward		£58	15	0

Number.	Description.	Price.	£	s.	d.
			58	15	0
2	Deflagrating spoons	10d. each.	0	1	8
1	Flat glass dish, 8 inch	1s. 6d. each.	0	1	6
6	Glass plates 4 ,,	1d. each	0	0	6
1	Stoppered bell jar	2s. 6d. each.	0	2	6
1	Jar and bung, 1 gallon	1s. 2d. each.	0	1	2
1	Aspirator, 4 pints, without glass stoppers	2s. 3d. each.	0	2	3
1 doz.	Watch glasses, assorted	1s. per doz.	0	1	0
1	Small Becker's balance	23s. each.	1	3	0
1 set.	Weights 100gr. to ·01gr.	12s. 6d. a set.	0	12	6
1	Metric measure	2s. each.	0	2	0
1	Globe and stopcock	8s. each.	0	8	0
48 pieces	Iron wire gauze	3d. each.	0	12	0
24ft.	Platinum wire, say 216 grs.	50s. per oz.	1	2	6
1 box.	,, foil, say 240 grs.	50s. per oz.	1	5	0
4	Gas jars, plain, 8×2	1s. each.	0	4	0
1	Charcoal furnace	4s. each.	0	4	0
1	Liebig's condenser (glass)	3s. 6d. each.	0	3	6
1	Sulphuretted hydrogen apparatus	7s. 6d. each.	0	7	6
1 Win. qt.	Hydrochloric acid, pure, 6lb.	4d. per lb.	0	2	0
1 ,,	,, ,, commercial, 6lb.	1½d. per lb.	0	0	9
1 ,,	Nitric acid, pure, 7lb.	8d. per lb.	0	4	8
1 ,,	Sulphuric acid, commercial, 10lb.	1½d. per lb.	0	1	3
1 ,,	Sulphurous acid, solution, 6lb.	4d. per lb.	0	2	0
1 ,,	Ammonia, 5lb.	5d. per lb.	0	2	1
1 ,,	Ammonium Sulphide, 5½lb.	6d. per lb.	0	2	9
1 ,,	Acetic acid, 5½lb.	4d. per lb.	0	1	10
1lb.	Acid, oxalic, commercial	6d. per lb.	0	0	6
1lb.	,, sulphuric, Nordhausen	1s. 4d. per lb.	0	1	4
2lb.	,, tartaric	2s. per lb.	0	4	0
1 pint	Methylated spirit	6d. per pint.	0	0	6
1lb.	Ammonium acetate	3s. 6d. per lb.	0	3	6
4lb.	,, carbonate	8d. per lb.	0	2	8
4lb.	,, chloride, pure	10d. per lb.	0	3	4
4oz.	,, molybdate	6d. per oz.	0	2	0
1lb.	,, nitrate, fused	1s. 4d per lb.	0	1	4
2lb.	,, oxalate	2s. per lb.	0	4	0
2lb.	,, sulphate	10d. per lb.	0	1	8
½lb.	Alcohol, absolute	4s. 6d. per lb.	0	2	3
1oz.	Antimony metal	1d. per oz.	0	0	1
1lb.	Asbestos, selected	4s. per lb.	0	4	0
1lb.	Barium chloride, pure	6d. per lb.	0	0	6
1lb.	,, hydrate	1s. per lb.	0	1	0
4lb.	,, nitrate	1s. per lb.	0	4	0
1oz.	Bismuth metal	10d. per oz.	0	0	10
8oz.	,, carbonate	1s. per. oz.	0	8	0
8oz.	,, nitrate	8d. per oz.	0	5	4
8oz.	,, sub-nitrate	9d. per oz.	0	6	0
4lb.	Borax, crystal	6d. per lb.	0	2	0
2lb.	Calcium chloride, dried, white	8d. per lb.	0	1	4
4lb.	Marble chips	1d. per lb.	0	0	4
2lb.	Calcium carbonate ppt.	4d. per lb.	0	0	8
2lb.	,, nitrate, pure	2s. per lb.	0	4	0
2lb.	Lime	4d. per lb.	0	0	8
2lb.	Calcium sulphate, com. gypsum	2d. per lb.	0	0	4
10lb.	Picked charcoal	3d. per lb.	0	2	6
1lb.	Animal ,,	4d. per lb.	0	0	4
4oz.	Cobalt nitrate	8d. per oz.	0	2	8
4lb.	Copper turnings	1s. 6d. per lb.	0	6	0
4oz.	,, oxide, granulated	5d. per oz.	0	1	8
1lb.	,, sulphate	4d. per lb.	0	0	4
½lb.	Ether, methylated	1s. 4d. per lb.	0	0	8
1lb.	Fusion mixture	2s. per lb.	0	2	0
¼oz.	Indigo carmine	1s. 4d. per oz.	0	0	4
1oz.	Iodine, commercial	1s. 4d. per oz.	0	1	4
2lb.	Iron filings	6d. per lb.	0	1	0
4lb.	,, sulphide	4d. per lb.	0	1	4
2lb.	Ferrous sulphate	4d. per lb.	0	0	8
4lb.	Lead acetate, pure	9d. per lb.	0	3	0
2lb.	,, nitrate, coml.	6d. per lb.	0	1	0
½lb.	,, oxide	6d. per lb.	0	0	3
¼lb.	Litmus	1s. per lb.	0	0	3
1lb.	Hydric potassic sulphate	1s. 8d. per lb.	0	1	8
		Forward	£71	0	1

Number.	Description.	Price.	£	s.	d.
			71	0	1
1oz.	Magnesium, ribbon	2s. per oz.	0	2	0
2lb.	,, carbonate, heavy	1s. per lb.	0	2	0
2lb.	,, sulphate, pure	6d. per lb.	0	1	0
4lb.	Manganese di-oxide powder	3d. per lb.	0	1	0
4lb.	,, ,, lump	6d. per lb.	0	2	0
1lb.	,, chloride, pure	2s. per lb.	0	2	0
1lb.	,, sulphate, pure	1s. 8d. per lb.	0	1	8
1lb.	,, carbonate	3s. per lb.	0	3	0
1lb.	Mercury	3s. per lb.	0	3	0
4oz.	Mercuric oxide, red	5d. per oz.	0	1	8
½lb.	Microcosmic salt	2s. 6d. per lb.	0	1	3
4oz.	Phosphorus	4d. per oz.	0	1	4
½oz.	Potassium	6s. per oz.	0	3	0
4lbs.	,, bichromate, com.	6d. per lb.	0	2	0
4lbs.	,, chlorate	10d. per lb.	0	3	4
2lbs.	,, carbonate	6d. per lb.	0	1	0
2lbs.	,, chloride, pure	9d. per lb.	0	1	6
1lb.	,, chromate	1s. 4d. per lb.	0	1	4
1lb.	,, cyanide	1s. 6d. per lb.	0	1	6
¼lb.	,, iodide	1s. per oz.	0	4	0
4lbs.	,, nitrate, com.	4d. per lb.	0	1	4
½lb.	,, ferrocyanide, com.	1s. 2d. per lb.	0	0	7
1lb.	,, hydrate sticks	1s. per lb.	0	1	0
2lbs.	,, sulphate	1s. per lb.	0	2	0
½lb.	,, sulpho-cyanide	2s. 6d. per lb.	0	1	3
2oz.	Silver, nitrate	3s. 6d. per oz.	0	7	0
1oz.	Sodium	10d. per oz.	0	0	10
1lb.	Soda Lime	1s. 4d. per lb.	0	1	4
4lbs.	Sodium Bicarbonate	4d. per lb.	0	1	4
1lb.	,, carbonate, pure crystal	6d. per lb.	0	0	6
4lbs.	,, hydrate	1s. per lb.	0	4	0
2lbs.	,, hypochlorite sol.	6d. per lb.	0	1	0
4lbs.	,, phosphate, pure	8d. per lb.	0	2	8
2lbs.	,, sulphate	6d. per lb.	0	1	0
1lb	Stannous chloride	2s. per lb.	0	2	0
1lb.	Starch, powder	6d. per lb.	0	0	6
2lbs.	Sulphur, roll	3d. per lb.	0	0	6
2lbs.	,, flower	3d. per lb.	0	0	6
2lbs.	Zinc, granulated	6d. per lb.	0	1	0
			£74	10	0

After the laboratory has been properly furnished the annual supply of chemicals for ordinary work should not be more than 5s. per pupil. Platinum is one of the most expensive requisites, and the output must be carefully supervised by the teacher.

APPARATUS, ETC., FOR SCIENCE TEACHING,

Considered by the Department to be indispensable for the efficient teaching of the following subjects of science :—

SUBJECT I.—PRACTICAL PLANE AND SOLID GEOMETRY.

Cone with three sections. Model showing the projections, traces, and intersections of lines. Wire or other model of a triangular prism. Wire or other model of a square prism. Wire or other model of a hexagonal prism. Wire or other model of a cube. Wire or other model of a square pyramid. Wire or other model of a cylinder. Wire or other model of a cone. Drawing board and T square. Blackboard.

SUBJECT II.—MACHINE CONSTRUCTION AND DRAWING.

Set of diagrams of machine details, mounted.

SUBJECT VI.—THEORETICAL MECHANICS.

DIVISION I.

Lever; pulleys, set of simple; compound pulleys; wheel and axle. (These can be obtained to mount on a blackboard with suspension rail and hooks.) Screw. Pendulum, simple, with three balls. Pendulum, compound. Spring balance. Working models of inclined plane and wedge.

DIVISION II.

Balance, with accessories for determining the specific gravity of an insoluble solid, whether heavier or lighter than water, and for determining the specific gravity of a liquid by comparing the weights of equal measured volumes of the liquid and water, or by comparing the weights of a glass ball in water and in the liquid. Specimens of floating bodies to show the position of stable equilibrium in different cases, *e.g.*, cylinders of wood or cork, some floating with the axis horizontal and some with the axis vertical, and with different degrees of stability. Air pump, with mercurial gauge. Glass tube closed at one end, and mercury for illustrating the pressure of the atmosphere, and of the vapours of different liquids. Syphon. Model of suction pump in which the action of the valves can be seen.

SUBJECT VII.—APPLIED MECHANICS.

In addition to the apparatus in the above list for Subject VI., the following: Heart-shaped cam in action between two friction rollers upon one oscillating bar and producing equable motion in both directions. The curves are involutes of the circle. Eccentric pin and slit bar with discs to produce rotatory or oscillatory motions by sliding contact. The quick return motion as used in Whitworth's shaping machine, and other tools, all the motion parts being shown. Folding diagram in cardboard, to show the principle upon which guide pulleys are arranged to convey an endless band from one wheel to another when their axes are not parallel. Rod reciprocating by means of an eccentric pin and link, arranged so as to show the variations of its motion which arise from different lengths of links, and also to exhibit "Booth's Motion."

ELEMENTARY PHYSICS.

An alternative for the first or elementary stage of Subjects VIII. and IX.

SOUND.

Tuning fork. Rod about ¾in. diameter and not less than 4ft. long. Deal sounding board. Wooden trough with glass front (to show wave motion). Caoutchouc tube about ¼in. wide and 12ft. long, filled with sand. Two turned iron tubes about 3ft. long and 4in. in diameter, with supports. Humming top, fitted with iron plate pierced with two rows of holes and with tooth edge. Monochord, and set of weights, with two sets of brass and steel wires.

LIGHT.

Gas jet, with pin-hole opening. Pin-hole camera. Wire pyramid, to illustrate law of inverse squares. Apparatus to illustrate the law of reflection. Concave glass mirror. Convex lens. Newton's colour disc, with spinning top. Glass prism.

HEAT.

Thermometer. Unequal-expansion bar. Apparatus to show the unequal expansion of different liquids. Simple air thermometer. Differential thermometer. Set of cylinders, copper, tin, lead, iron, zinc, bismuth, cork, wood, for specific heats. Thermometer tubes. Brass tube.

MAGNETISM.

Bar magnet. Knitting needles to magnetise. Bar of soft iron. Magnetic needle on vertical pivot. Iron and steel filings.

ELECTRICITY.

Glass tube. Flannel and silk rubbers. Sticks of shellac and sealing wax. Amalgam. Electroscope. Electrical machine. Insulated conducting balls.

Grove's or Bunsen's battery, four cells at least. Strips of copper and zinc. Cotton-covered wire. Electrolysis of water apparatus. Electric bell.

SUBJECT VIII.—SOUND, LIGHT, AND HEAT.

SOUND (ELEMENTARY STAGE).

Air pump. Alarum. Caoutchouc tube, about ¼ inch wide and 12 feet long, filled with sand. Wooden trough with glass front; round trough (to show wave motion). Tuning fork. Rod, about ¾ inch diameter and not less than 4 feet long. Deal sounding board. Simple pendulum. Humming top, fitted with iron plate pierced with two rows of holes, and with tooth edge. 2 tinned tubes; pinhole gas burner for sensitive flame; batswing burner (to show reflection of sound).

SOUND (ADVANCED STAGE).

Boyle's tube. Fire syringe. 2 tuning forks in unison. 1 tuning fork an octave higher. Iron table vice with cork-lined clamp. Square glass (or brass) plate for ditto. Violin bow. Monochord, and set of weights, with two sets of brass and steel wires. Deal and oak rods, each 6ft. long by ½in. Deal and oak rods, each 3ft. long by ½in. Glass tube 3ft. long by ½in. 2 long measuring glasses to be tuned by water to resonate to the forks. Gas jet with small orifice and glass tubes for singing flames. Galton's whistle. Small mirrors to attach to tuning forks for Lissajous' figures and beats. Lantern.

LIGHT (ELEMENTARY STAGE).

Gas jet. Pinhole camera. Wire pyramid to illustrate law of inverse squares. Mirror turning about vertical axis, wooden arm and graduated paper for law of reflection. Two glass mirrors to be put at different angles for reflection. Two concave mirrors Convex lens. Glass trough, with divisions, to show refraction. Two flat glass cells. Glass prism. Trough with lens to measure index of refraction. Lantern.

LIGHT (ADVANCED STAGE).

Model of goniometer, or spectroscope. Polished metal semi-circle mounted on wood painted white for caustics Convex mirror. Glass trough to show critical angle. Set of lenses. Prisms of flint and crown glass. Carbon bisulphide prism. Selected concave and convex spectacle glasses to show Newton's rings. Rings, &c. to form soap films. Wooden model to illustrate Fresnel's interference bands. Simple polariscope. Differential air thermometer, with one bulb blackened to show heat due to absorption. Photographic printing frame, with two pieces of blue and red glass to expose. Glasses of different colours to show absorption. Coloured bodies to place in different parts of the spectrum. Phosphorescence tube. Wood painted with luminous paint. Colour disc. Wool test for colour blindness. Lantern.

HEAT (ELEMENTARY STAGE).

Cryophorus. Water hammer. Differential thermometer. Thermometer. Unequal expansion bar. Contraction apparatus, with bars. Metal bar and gauge to show expansion, or s'Gravesande's ring. Concave tin reflectors (2). Set of iron balls, with stand for radiation experiments. Copper ball, with ring handle. Set of cylinders, copper, tin, lead, iron, zinc, bismuth, cork, wood, for specific heats. Leslie's cube. Thermometer tubes. Barometer tubes.

HEAT (ADVANCED STAGE).

Glass bulb and tube filled with coloured water, to show expansion of glass when suddenly heated. Lead and hammer to show production of heat. Thermopile and galvanometer. Metal rod with small air thermometers attached to show curve for measurement of conductivity. Steel mortar and close fitting pestle to make cylinders of ice. Wet and dry bulb thermometers. Blackened tin vessel for freezing mixture to show deposition of dew. Bright metal dish for spheroidal state. Small compression pump and reservoir. Lantern.

SUBJECT IX.—MAGNETISM AND ELECTRICITY.

MAGNETISM.

(*a*) Piece of magnetic iron ore. (*a*) Magnetic needle on vertical pivot. Dipping needle. Pair of bar magnets. (*a*) Horseshoe magnet. (*a*) Iron and steel filings. Pieces of soft iron. (*a*) Knitting needles to magnetise. (*a*) Compass card.

FRICTIONAL ELECTRICITY.

(*a*) Electrical glass tube. (*a*) Fur and silk rubbers. (*a*) Stick of shellac. (*a*) Stick of sulphur. (*a*) Stick of sealing wax. Brass tube or rod with rounded ends. Electrical machine, plate or cylinder. Amalgam. (*a*) Electroscope. Leyden jars. Leyden jar with movable coating. Discharger. Sheet of caoutchouc. (*a*) Electrophorus. Pith ball electrometer. (*a*) Insulating stand. Two conductors, cone cylinder, and balls, to fit on stand. Roll of tinfoil on glass tube. Fulminating pane. Electric whirl.

(*a*) See under Subject XXIII.

VOLTAIC ELECTRICITY.

Strips of copper and zinc. Daniell's cell. Smee's cell. Grove's or Bunsen's battery, four or more cells. Copper wire, covered with cotton. Copper wire, covered with silk. Copper wire, covered with gutta-percha. Oersted's experiment. Electro-magnet. Pair of flat spirals on boards. Galvanometer. Model of single needle telegraph. Induction coil. Mercury, 2lb. Electrolysis of water apparatus.

SUBJECT X.—INORGANIC CHEMISTRY.

Spirit lamp. (*b*) Bunsen burner, rose and blowpipe jet. Bunsen burner, with spreading flame. (*c*) Mouth blowpipe. Crucible tongs. (*b*) Platinum foil and wire. Iron spoons. (*b*) Retort stands, each with a clamp and three rings (2.) Iron tripod. (*b*) Sand bath. (*b*) Wire gauze, 2 pieces. Pipeclay triangle. Test tube brush. Spatula. Triangular file in handle. Round file in handle. (*b*) Cork borers, set of 6, and an iron rod. Clips, 1 spring and 1 screw. Indiarubber tubing, 4 pieces, namely, 6 feet of $\frac{5}{16}$ inch; 3 feet of $\frac{1}{4}$ inch; 3 feet of $\frac{3}{16}$ inch; 3 feet of $\frac{1}{8}$ inch. Indiarubber stoppers, 30, namely, 1 of $1\frac{1}{4}$ inch; 1 of 1 inch; 3 of $\frac{7}{8}$ inch; 3 of $\frac{3}{4}$ inch; 8 of $\frac{5}{8}$ inch; 4 of $\frac{1}{2}$ inch; 2 of $\frac{3}{8}$ inch, all having one hole; also 2 of $\frac{7}{8}$ inch; 3 of $\frac{3}{4}$ inch; 3 of $\frac{5}{8}$ inch, all having two holes. (*b*) Pneumatic trough. Deflagrating spoon. Mortar and pestle. (*b*) China basins (2). China plates (2). Porcelain crucible and lid. (*b*) Porcelain evaporating basin. Glass rod. 1 specimen. Glass tubing, of potash glass and of soda glass, 18 specimens. Glass bulb with long neck. Glass tube with bulb for reduction experiments. Calcium chloride tube. U-tubes (2). Tumblers (2). Aspirator. Glass crystallising dish. Gas jars (3). Stoppered bottles, wide mouthed, for gases (5). (*b*) Bell jar (stoppered). Ground glass plates, 1 of 5 inches; 3 of $3\frac{1}{2}$ inches; 2 of 3 inches. Soda water bottle. Funnel. Filter papers, 1 packet of $5\frac{1}{2}$ inches, and one packet of $4\frac{1}{2}$ inches. Thistle funnels, 2. (*b*) Flasks, 2 of 24oz.; 3 of 16oz.; 3 of 8oz. Beaker (lipped), nest of 4. Clock glasses, 1 of 4 inches and 1 of $3\frac{1}{2}$ inches. Watch glasses, 1 of 3 inches and 1 of $2\frac{3}{4}$ inches. (*b*) Test tube stand with holes and pegs for 12 tubes. Boiling tubes, 4 of 7 inches by 1 inch. (*b*) Test tubes, 12 of 6 inches by $\frac{3}{4}$ inch. Retorts, 1 of

---

(*b*) See under Subjects XIV., XXIII., and XXIV. (*c*) See under Subjects XXIII. and XXIV.

LIBRARY OF THE UNIVERSITY

16oz., stoppered; 1 of 8oz., unstoppered; 1 of 4oz., unstoppered. Apothecaries' scales and 17 weights, namely, 2oz., 1oz., ½oz., ¼oz., 2 drachms, 1 drachm, 2 scruples, 1½ scruples, 1 scruple, ½ scruple, 6 grains, 5 grains, 4 grains, 3 grains, 2 grains, 1 grain, ½ grain, in a box. Stand for suspending the scales. Measures and weights of the metric system, namely, 1 metre, 1 cubic decimetre, 1 cubic centimetre, 1 kilogram, 1 hectogram, 1 decagram, 1 gram, 1 decigram, 1 centigram, 1 milligram. Grove's battery, 5 cells, with two conducting wires. Ruhmkorff's coil, with two conducting wires. Apparatus to show that there is no destruction of matter when a candle burns. Apparatus for burning air in an atmosphere of coal gas. Globular flask fitted for showing that air has weight. Horseshoe magnet and tin tray to suspend from the beam of the scales. Apparatus for the electrolysis of water and of hydrochloric acid, with stand and pair of plantinum poles and of carbon poles. Apparatus for generating ozone. Blocks to illustrate combination in multiple proportions (8). Apparatus for preparing nitric peroxide from air. Clay tobacco pipe with long stem.

SUBJECT XII.—GEOLOGY.

Geological map of the British Isles. Geological map (1 inch) of the district. Geological horizontal sections of the district. Typical collection of fossils.

SUBJECT XIV.—HUMAN PHYSIOLOGY.

An articulated skeleton, or a set of bones of upper and lower extremities and ribs. Diagram of the organs of circulation and respiration. Compound microscope. Dissecting instruments. Apparatus for simple experiments in chemistry. The articles required are marked (*b*) under the head of Subject X.

SUBJECT XVII.—BOTANY.

Microscope, compound. Microscope, simple. Set of botanical diagrams.

SUBJECT XXII.—STEAM.

Mariotte's apparatus to illustrate Boyle's law. Apparatus for experiments on latent heat of steam. Model of parallel motion with pantograph.—N.B. If this is not procurable, it may be replaced by the following (one or two varieties showing form in common use):

Parallel motion, five varieties: Beam engine; marine engine; small steam engine (*a*), Watt's engine, small steam engine (*b*). Working model of beam engine, sectional model of locomotive engine. (These are very desirable, but if good diagrams be used, they will not be looked upon as indispensable.) Reversing gear.

SUBJECT XXIII.—PHYSIOGRAPHY.

Maximum, minimum, and black bulb thermometers. Barometer. Rain gauge, simple. Ordnance survey map of district, showing contour lines. Terrestrial globe, not less than 12in. diameter. Geological map of the British Isles. Apparatus for simple experiments in magnetism, electricity, and chemistry. The articles required are marked (*a*) and (*b*) under the heads of Subjects IX. and X.

SUBJECT XXIV.—PRINCIPLES OF AGRICULTURE.

Apparatus for simple experiments in chemistry. The articles required are marked (*b*) and (*c*) under the head of Subject X.

Hints on Management of Science and Art Evening Schools and Classes.—I have little to add to that I have already written at the commencement of the chapter, and will briefly summarise what I consider essential to good management and consequent success in the work.

1. The subjects taken up in any district should be those branches of science applicable to the trade and industries of the locality.

2. Each school should meet at least three nights per week.

3. Drawing should be taught on a distinct evening at each school.

4. The sciences should be carefully taught in organised courses.

5. The head master of the school should have complete discretion as to the number and character of the science subjects taken up by each pupil, and it would be well if each pupil had a card with the subjects approved, duly specified and initialed by the head master.

6. In such important subjects as machine drawing, building construction, and geometry, the instruction should be largely tutorial, and a sufficient staff of practical teachers must be employed to work under the supervision of the head master.

7. An adequate amount of home work should be done by each pupil, and the work properly checked by the teachers.

8. The idea that 20 lessons is sufficient for examination purposes must be battled with and removed from the minds of the students.

9. Absentees must be regularly hunted up by personal visitation, if possible; if not, then circulars should be regularly sent out in the case of junior pupils.

10. A stock book should be kept, showing the apparatus, &c., at each school.

11. The classes should be regularly visited by members of the Committee, and the registers signed.

12. The general register should be as far as possible kept up to date.

13. A good lamp over the main entrance of the school is a capital addition to it, and can be no objection on the score that the premises are used for other purposes.

14. It is a good plan to have an annual distribution of prizes and awards on an early evening in September. The best chairman available should be secured, and as much interest as possible imported into the proceedings. This is an excellent mode of heralding the re-opening of the Evening Schools for the winter session. It is a bad plan to keep the students waiting too long for their certificates and prizes.

15. On the Saturday before the school reopens the good offices of the local press should be secured, and a clearly-written summary of next winter's work inserted in the newspapers.

16. An attractive class list is indispensable, and

copies should be distributed without charge to those applying for them. For all large works a number of copies should be sent to the head of the firm, with a letter asking for permission to have the class lists placed in the way of the workpeople, and requesting the co-operation of employers in other ways.

17. All free libraries should be supplied with copies of the class list, and it is a good plan to have a display card printed in bright colours for hanging up in schools, free libraries, works, and shop windows.

18. If possible a few popular lectures might with great advantage be given during the session, and at Christmas time the pupils should have a soiree, when considerable interest may be imparted by an exhibition of microphones and scientific objects of interest, and if a popular lecture can be arranged so much the better. These may very easily all find their place in the programme of the annual soiree, blended with lighter forms of social enjoyment.

19. Should there be a journal in connection with the Evening Schools of the local authority, articles of special interest in science and art should frequently appear, together with solutions of questions set by the Science and Art Department in previous years. The permission of the Department to reprint questions must be obtained.

Examinations.—These are of two kinds: (*a*) Personal examinations, and (*b*) examination of works.

The personal examinations of students in Science and Art Schools and Classes are held annually about May. The May examinations are open to external candidates.

(1) **Science.**—The subjects of the personal examinations in science are stated at pp. 102-3 of Manual, and in art are as follow :—

(2) **Art.**—By a minute of the Science and Art Department (12th April, 1892), the following is the scheme for examinations in art :—

(*a*) Model Drawing :—Elementary Stage : Drawing in outline from models. (Subject 3*a*.) Advanced Stage: Shading from models. (Subject 5*a*.)

(*b*) Freehand Drawing of Ornament:—Elementary Stage: Drawing in outline from the flat. (Subject 2*b*.) Advanced Stage: Drawing in outline from the cast. (Subject 3*b*.)

(*c*) Drawing in Light and Shade from a Cast:—Elementary Stage and Advanced Stage. (Subject 5*b*.)

(*d*) Perspective:—Elementary Stage. (Subject 1*c*.) Advanced Stage. (Subject 1*e* and 1*c*.)

(*e*) Anatomy:—Subject 9. (No Elementary Stage.)

(*f*) Drawing from the Antique:—Subject $8b^2$. (No Elementary Stage.)

(*g*) Principles of Ornament:—Elementary Stage and Advanced Stage. (Subject 22.)

(*h*) Painting from Still Life:—Subject 15. (No Elementary Stage.)

(*i*) Drawing from the Life:—Subject $8c^2$. (No Elementary Stage.)

(*j*) Architecture:—Subject 1*d*. (No Elementary Stage.)

(*k*) Historic Ornament:—Subject 22*d*. (No Elementary Stage.)

(*l*) Design (Ornament):—Elementary Stage and Advanced Stage. (Subject 23*c*.) Honours. (Subject 23*d*.)

(*m*) Drawing the Antique from Memory:—Subject 8*f*. (No Elementary Stage.)

(*n*) Painting Ornament in Monochrome:—Subject 1*a*. (No Elementary Stage.)

(*o*) Architectural Design:—Subject 23*b*. (No Elementary Stage.)

(*p*) Modelling from a Cast:—Subject 18*a*. (Elementary Stage only.)

(*q*) Modelling from the Life:—Subject 19*e*. (No Elementary Stage.)

(*r*) Modelling from the Antique:—Subject $19b^2$. (No Elementary Stage.)

(*s*) Modelling Design (Ornament):—Elementary Stage and Advanced Stage. (Subject 23*e*.) Honours. (Subject 23*f*.)

The examination of works commences in April. The works are sent to the Department for that purpose. The details with regard to examinations in Modelling are stated at page 70 of Directory.

WORKS SENT TO SOUTH KENSINGTON FOR EXAMINATION.

Works on which payments under § 24*c*, p. 73, and prizes under § 28, p. 75 Science and Art Directory, are to be claimed, and works for certificates must be properly labelled according to the instructions in Form No. 564, and must be sent not later than the 9th April from Science and Art Schools and Classes to South Kensington for examination.

The works admitted into the national competition will be exhibited in London, and in some of the more important provincial towns where suitable space can be provided.

(*a*) On the receipt of proper vouchers the Department pays the carriage of works sent from Science and Art Schools and Classes and the cost of suitable cases or packing materials used for their transmission.

(*b*) The works sent up must have been executed during the previous year in the school or class during its recognised hours of meeting; and must be restricted to drawings, paintings, and models. They should be more than preparatory exercises for a personal examination—something involving greater care in execution or instruction, and different from, or beyond what is tested and paid for under the rules for personal examinations held locally. Works of not more importance than exercises done at the May examination will not therefore be considered. No painting from the figure, still life, landscapes, and interiors, &c., exceeding 30in. by 25in. in size, no drawing exceeding an imperial sheet of drawing paper in size, and no design exceeding 48in. by 48in. will be admitted to examination. No modelled figure exceeding 36in. in height, no modelled bust, group, or object exceeding 36in. in height and 24in. width at the base, and no modelled panel exceeding 36in. by 24in. will be admitted to the examination.

(1—Subject 2*a*): Work in Subject 2*a* may not be sent up. (2—Subject 2*b*): When larger and more important than examination work, well executed work in Subject 2*b* may be sent up. (3—Subjects 4*a* and 4*b*): Works in these subjects may not be sent up. (4—Subjects 5*a* and 5*b*): Works in these subjects may be sent up when they are more important and more finished than the work required for the personal examinations in the advanced stages of the same subjects. (5—Subjects 6*a* and 6*b* from flat examples): Works in these subjects may not be sent up. (6—Subject 7): Work in this subject may not be sent up. (7—Subjects 8*a*, 8*b*[1], and 8*b*[2], and 14*a*): Works in these subjects may only be sent up when more completely carried out or finished than they can be at the personal examinations. (8—Subject 9): It should be stated upon each drawing whether it is copied from the flat, from the round, or is the student's own setting of the anatomy within an outline of a figure. (9—Subjects 13*a* and 13*b*): Works in these subjects may not be submitted unless well finished and from specially good examples.

(*c*) Studies of buildings, of objects in public and private collections, landscape or landscape details, may be submitted, even if executed away from the school, provided it be certified that they have been executed entirely under the supervision of the master.

(*d*) Drawings or paintings from flat examples or casts in relief, of the same size as the originals, may not be submitted for examination; nor may works in the modelling stages which are of the same size as the examples from which they are copied, except models from life, or flowers or foliage from nature. Drawings from the life may be submitted although executed in a short time. Works glazed or in frames may not be submitted.

(*e*) Only one satisfactory specimen of modelling may be submitted from each student attending a modelling class. This work must be more complete than work done at personal examinations in modelling. The mouldings about decorative panels, friezes, and suchlike (Subjects 18, 20, 23*e*, 23*f*, &c.) must be always given when such works are submitted. No copies from the cast, except careful work from the antique or important pieces of ornament, nor fragments, should be sent up. Modelled work in the Subjects 18*a*, 18*d*, 18*e*, 19*g*, should not be sent up. No cast submitted for examination may be coloured or bronzed. If necessary, casts may be coated with a preparation of wax and turpentine without colour. No models in terra-cotta, clay, or kindred heavy material may be submitted.

(*f*) Works submitted for certificates by students of Schools of Art and Art Classes must be forwarded with the school or class works of the session, and be duly entered on the Supplementary Form 528.

(*g*) Every work submitted as a certificate work must be clearly marked with the title and group of the certificate for which it is submitted.

(*h*) Candidates belonging to no school or class must send their certificate works, carriage prepaid, direct to the Department of Science and Art, London, S.W., on or before the 9th of April. Each such candidate must fill up a supplementary fly-leaf to Form 528 in respect of the works submitted.

(*i*) A work which has been once submitted may not be again submitted.

APPLICATION FOR EXAMINATION PAPERS.

Application by Local Committees for local examination papers must be made to the Department on Form No. 119, before the 26th March. On that date the Department's examination lists will be finally closed. Applications after the proper date, or such as have not been made strictly in accordance with the rules, will not be entertained. In places where a special local secretary has been appointed, or an amalgamated examination committee has been formed under § XXIX., Form No. 119 should be sent, not later than the 21st March, to the special local secretary or the secretary of the amalgamated committee, as the case may be, who will transmit it to the Department. The rules for conducting the examinations will be found for science on Form No 91, p. 120, and for art on Forms Nos. 91*a* and 965*c*, pages 133 and 138 Science and Art Directory. (XXXV.)

Prizes—Exhibitions and Scholarships.—The following are the prizes given in the Science and Art Evening Schools conducted by the Manchester School Board:—

SCIENCE.

1. A prize of the value of 30s. to the candidate who obtains the highest number of marks in the honours stage in any science subject at the examinations held by the Science and Art Department.

2. A prize of the value of 10s. to all candidates who obtain a first-class in the advanced stage, and 5s. for a pass in the elementary stage, in any science subject at the examinations held by the Science and Art Department. These prizes will not be awarded to students who obtain prizes from the Science and Art Department.

ART.

1. A prize of £2 2s. for the best painting by a pupil of the Central School of Art, the work to remain the property of the Board.

2. Prizes will be awarded in lieu of those which may be withdrawn by the Science and Art Department.

Full particulars of all local scholarships and prizes should also appear in the class list.

For details as to Royal Exhibitions, National Scholarships, Free Studentships, Whitworth Scholarships and Exhibitions, &c., see Chapter IX. "Technical Instruction—Advanced," on pages 211-214 of this Manual. For medals, prizes, &c., offered by S. and A. Department, see page 38 (Science) and page 75 (Art) S. and A. Directory.

Science Teachers.—Qualifications for Earning Payments on Results:—

In order to obtain payments on the results of instruction in a subject of science the teacher of the class must, before giving the instruction on which a claim is to be made, have obtained in that subject—(*a*) a first class in the advanced stage of the May examinations; or (*b*) a class in honours; or (*c*) a certificate of the Royal College of Science, London; or (*d*) a first-class certificate in the advanced stage, or a class in honours at the special examination in training colleges. A pass in Sec. I. (Geometrical Drawing) of the elementary stage of P. P. and S. geometry, or any higher success qualifies the holder to earn the grant under sec. 19*e*.

MATHEMATICS.—In mathematics, a first class at the May examination in each stage qualifies the holder to earn payments on results in that stage, or in the preceding stages; and honours in Stages 3, 5, and 7, qualify in those and the preceding stages. A pass in Stage 1 of the training college examination qualifies in Stages 1, 2, 3, 4. A pass in Stage 2 of the same examination qualifies in all the stages.

In theoretical mechanics a first class in the advanced stage of subdivision (*a*) or (*b*) qualifies the holder to earn payments in that subdivision, and also in the elementary stage (*a*) and (*b*). Honours in (*a*) or (*b*) qualify the holder to earn payments in VI., (*a*) and (*b*).

In sound, light, and heat a first class in subdivision (*a*) or (*b*) or (*c*) qualifies the holder to earn payments in that subdivision, and also in the common elementary stage. Honours in subdivision (*a*) or (*b*) or (*c*) qualify the holder to earn payments in VIII. (*a*), (*b*), and (*c*).

The qualification to earn payments on results in either Subject VIII. or Subject IX. also qualifies in the alternative course in physics.

PRACTICAL CHEMISTRY AND METALLURGY.—In practical chemistry (inorganic or organic) or in practical metallurgy the teacher must have obtained a first class in the advanced stage or a success in honours of both the theoretical and practical divisions of those subjects. This rule does not apply to teachers who had been accepted by the Department and who had taught classes in practical chemistry or practical metallurgy before May, 1883.

All persons who were qualified to earn payments on results in any subject of science previous to July, 1888, and who at that date were teaching, or had previously been teaching, a class in that subject under the Department of Science and Art, remain qualified to earn payments in that subject.

CERTIFICATES PRIOR TO 1867.—The science teachers' certificates awarded previously to 1867 still remain in force, and with regard to them and the alterations made in Subjects XV., XVI., in 1873, and in Subject XXIII. in 1876, information can be obtained on application to the Department.

QUALIFICATION WITHOUT EXAMINATION.—The examination for qualification to earn payments on the results of science instruction may be dispensed with in the case of—(*a*) the teachers of a school under the Public Libraries Acts; of a school (not being a public elementary school) governed by a scheme under the Endowed Schools Acts or the City of London Parochial Charities Act, the governors of which act in their official capacity as Local Committee; of a school which is under the control of a local authority under the Technical Instruction Act; or of certain other recognised public institutions.

TRAINING COLLEGE TEACHERS.—(*b*) Teachers on the staff of training colleges who are regularly employed in them; (*c*) associates of the Royal College of Science, London, or of the Royal College of Science, Dublin; (*d*) graduates of any university of the United Kingdom whose degrees cover the subjects they propose to teach.

ELEMENTARY SCHOOL TEACHERS.—(*e*) Teachers certificated by the English or Scotch Education Department in respect of mathematics (Subject V., Stage 1).

(*f*) Teachers who, previously to July, 1888, were qualified to earn payments in (Art) 2nd grade geometry, or who have passed in the first section of the elementary stage of Subject I. in respect of that section (geometrical drawing); (*g*) and, exceptionally, other specially qualified persons.

FORMAL APPLICATION BY COMMITTEE NECESSARY.—All applications for exemption under these sections must be made by the Committee of the school under which the teacher is to act. The application must be made before he commences to teach, and must, in the case of a university graduate, be accompanied by his diploma or a certificate from the registrar of his university. (Pages 27-29, Science and Art Directory.)

Art Teachers' Qualification for Earning Payments on Results.—Certificates.—There are three forms of certificates for art teachers—(I.) The Elementary Drawing Certificate (first-class and second-class); (II.) the Art Class Teacher's Certificate; and (III.) the Art Master's Certificate.

These several certificates can be claimed when the examinations detailed in the succeeding paragraphs have been passed. In applying for his certificate the applicant must state when and where he passed the examinations. Applicants for certificates may be required to be re-examined in any subject in which they have passed more than three years previously. A teacher holding the Art Master's certificate for Group IV. only is not qualified for the head mastership of a School of Art. (See par. 8.) Other specially-qualified persons may be exceptionally recognised.

ELEMENTARY DRAWING CERTIFICATES.—For requirements see page 64 of Science and Art Directory. These were formerly known as D certificates.

For Art Class Teacher's Certificate and Art Master's Certificates, see "Directory of the Science and Art Department," pages 64 and 65.

ART CLASS.—An art class must be under the instruction of a teacher holding the Art Class Teacher's Certificate or an Art Master's Certificate (see pp. 64, 65 of Science and Art Directory). (*a*) Classes under the instruction of teachers holding either the Elementary School Teacher's Certificate D., the 2nd grade Drawing Certificate, or the new Elementary Drawing Certificate, may be registered for payments on the results of examinations in the Elementary Stages of Subjects 2*b*, 3*a*, and 5*b*, and also for the payment of 10s. for passes in Section I. (Geometrical Drawing) of the Elementary Stage of Science Subject I.). (*b*) Classes under the instruction of teachers qualified to earn payments on results in Science Subject I. may be registered for payments on the results of the examination in the Elementary Stage (only) of Perspective—Subject 1*c*.

Fees.—I cannot lay down any rule as to the fees that should be charged. Each locality will be guided by local circumstances and the needs of the pupils. The following are the fees charged by the Manchester School Board :—

CENTRAL SCHOOL OF SCIENCE AND ART, DEANSGATE.

(SESSION SEPTEMBER TO MAY.)

SCIENCE.

Inclusive fee for session, covering five sciences, 5s.; inclusive with practical chemistry, 10s. 6d.; separate subjects, 2s.; chemistry (practical), 5s. 6d.

ART AND DESIGN.

GROUP I.—Second grade subjects, 2s. per term, or 3s. per session.

GROUP II.—Third grade subjects, 5s. per term, or 7s. 6d per session.

NOTE.—At the Central School of Art the session extends from September 14th, 1891, to April 29th, 1892, and is divided into two terms, viz., the autumn term (Sept.—Dec.) and spring term (Jan.—April.

BRANCH SCIENCE AND ART EVENING SCHOOLS.

Inclusive fee for session, five sciences with practical chemistry and art, 5s.; separate subjects, 2s.

NOTE.—The laboratory accommodation for practical chemistry will be reserved for those pupils taking the inclusive course, and who are approved by the head master of the school. The Central School will be an exception to this rule.

Grants from Science and Art Department.—Science.—The Science and Art Department, by a circular dated November—, 1891, have given notice of the following proposed charges in the grants for science teaching, to come into force from 1st June, 1892:—

The payment of £1 for the second class in the elementary stage in science will cease, though an elementary paper will still be set and marked "pass" or "fail," the standard being that now required for a first class. In order to encourage more advanced instruction, the payments for the advanced stages and for honours will be very materially increased. The payments are to be—

£2 for a pass in the elementary stage (1st class).
£5 and £2 10s. in the advanced stage (1st and 2nd classes respectively).
£8 and £4 in honours (1st and 2nd classes respectively).

The following are exceptions :—

£3 for a pass in the elementary stage of practical chemistry and practical metallurgy.
£6 and £3 10s. in advanced practical chemistry and practical metallurgy (1st and 2nd classes).
£2 in Stage I., mathematics.
£3 and £2 in stages II. and IV., mathematics (1st and 2nd classes).
£4 and £3 in stage III., mathematics (1st and 2nd classes).
£5 and £4 in stages V., VI., and VII., mathematics (1st and 2nd classes).
£8 and £4 in honours stages, mathematics (1st and 2nd classes).
10s. for a pass Section I. (Geometrical Drawing) Elementary Stage of P. P. and S. Geometry.
Payments not exceeding £3 per Student for Works in Subjects I., II., III., and IV. (See S. and A. Directory.)

ORGANISED SCIENCE SCHOOLS.

A capitation payment of 20s. for each student making at least 250 attendances (day), or 10s. for each student making at *least* 60 attendances (night), and passing in one subject of science, or obtaining a higher success in a subject in which he has already been successful. These payments are in addition to the payments on results.

Art.—The payments on results of the May examination will be £1 and 10s. for a 1st or 2nd class respectively in the elementary stage of those subjects in which there is such a stage. £3, £2, and £1 for excellent, 1st or 2nd class respectively in the advanced stage of each subject in which there is a such a stage, and in each subject in which there is no elementary or advanced stage. £6 and £3 for 1st or 2nd class respectively in the honours stage of those subjects in which there is such a stage. There are also grants for works.

CONDITIONS ON PAYMENT OF GRANTS FOR SCIENCE AND ART.

Teachers must be qualified. Twenty-eight lessons must have been given during the session in each subject of science or group of art. Students for whom payments are due must be persons (*a*) either in receipt of weekly wages, and their children not gaining their own livelihood ; (*b*) teachers of public elementary schools, &c. ; (*c*) persons with incomes of not more than £400 per annum, and their children not gaining their own livelihood; (*d*) scholars in public elementary schools (who have passed Standard VI.), &c.; (*e*) students in organised science school or evening class for industrial students. Each student must have received 20 lessons in each subject (XL. abridged). A pupil in an Elementary School cannot be presented in any subject in which group he has been examined in a class or specific subject since the preceding 1st of August.

Payments on account of the same student are limited to two subjects, excepting that where Subject I. (P. P. and S. Geometry) and Subject V. (Mathematics) are taken they are allowed in addition.

NOTE.—Subject V. (Mathematics in all stages); Subject VI. (Theoretical Mechanics), Divisions *a* and *b*; Subject VIII. (Sound, Light, and Heat), Divisions *a*, *b*, and *c*; Subject X. with X*p*. (Theoretical and Practical Inorganic Chemistry); Subject XI. with XI*p*. (Theoretical and Practical Organic Chemistry); and Subject XIX. with XIX*p*. (Theoretical and Practical Metallurgy), are each considered as one subject.

A pupil may consequently be presented for examination in five subjects. For instance, he may take the following: Magnetism and Electricity, Chemistry (Theoretical and Practical) Mathematics, and Geometry.

In an organised science school a pupil may take three subjects in addition to geometry and mathematics.

A deduction of 2s. 6d. may be made for each paper of answers which is not awarded 25 per cent of marks.

Science Schools in districts of a less population than 5,000, not receiving aid from local authorities, and any Science School in Ireland, will be allowed to continue until further notice on the former system, if the committees of such schools desire it. Notice to be given to the Science and Art Department, before 1st January, 1893.

Male pupil teachers, male assistant teachers, and male teachers trained at the public expense, are not allowed to earn the grant in Stage I. of Mathematics.

For other rules and restrictions as to grants, see Science and Art Directory.

The following example is given of the mode of filling up the claim for payment of science grants under new scale, so far as the columns of Form $\frac{51}{s}$ are concerned.

Student's No. on General Register.	No. of registered Attendances.	Names of Students claimed on (in strict alphabetical order).		Age last Birthday.	Trade or Occupation. (If the student has no trade or occupation the father's trade or occupation should be given with an (f.) after it.	Category a, b, c, d, or e under which Claim is made.	Particulars of Successes claimed on.					Payment claimed.	
							Success at the late Examination.			Highest success in same Subject in any previous Examination.			
		Surname.	Christian Name(s) in full.				Subject.	Stage.	Class.	Stage.	Class.	£	s.
20	27	Adams ..	John James	15	Tailor (*f.*)	a.	I.	E. § 1	Pass	—	—	0	10
	24	,, ..	,, ..	,,	,, ..	,,	V.	1	Pass	—	—	2	0
	26	,, ..	,, ..	,,	,, ..	,,	VI. a.	E.	Pass	—	—	2	0
14	25	Carter ..	William Henry	22	Clerk in Gas Works	c.	X.	A.	1	E.	1	5	0
	20	,, ..	,, ..	,,	,, ..	,,	X. p.	A.	2	—	—	3	10
3	25	Jones ..	Richard	23	Bricklayer	a.	I.	E.	Pass	—	—	2	0
	28	,, ..	,, ..	,,	,, ..	,,	III.	A.	1	A.	2	2	10
18	30	Robinson	Peter Charles	20	Fitter ..	a.	I.	A.	2	E.	2	2	10
	30	,, ..	,, ..	,,	,, ..	,,	II.	A.	1	E.	1	5	0
	28	,, ..	,, ..	,,	,, ..	,,	XXII.	E.	Pass	—	—	2	0
9	26	Smith ..	Robert ..	16	Postman (*f.*)	d.	VI. b.	A.	2	—	—	2	10
	25	,, ..	,, ..	,,	,, :	,,	VIII.	E.	Pass	—	—	2	0
25	27	,, ..	Arthur Hugh	17	Publican (*f.*)	d.	XIV.	E.	Pass	E.	2	1	0
8	30	Thomson	Charles..	14	Office-boy	a.	IX.	E.	Pass	—	—	2	0
19	30	,, ..	George ..	19	Joiner's App'ce.	e.	I.	A.	2	E.	1	2	10
	26	,, ..	,, ..	,,	,, ..	,,	V.	2	2	1	1	2	0
2	22	Thompson ..	Henry ..	1	Engineer's App'ce.	e.	II.	A.	2	E.	2	2	10
	24	,, ..	,, ..	,,	,, ..	,,	VII.	E.	Pass	—	—	2	0
4	30	Watson ..	William	18	Pupil-teacher	b.	V.	2	1	—	—	3	0
	26	,, ..	,, ..	,,	,, ..	,,	X.	A.	2	E.	1	2	10
	26	,, ..	,, ..	,,	,, ..	,,	X. p.	E.	Pass	—	—	3	0
7	29	Williams	Charles..	21	Dyer ..	e.	XI. p.	A.	1	A.	2	2	10
5	28	Young ..	Robert ..	26	Certificated Teacher	b.	V.	3	1	2	1	4	0
	26	,, ..	,, ..	,,	,, ..	,,	VI. a.	A.	2	E.	1	2	10
	26	,, ..	,, ..	,,	,, ..	,,	VI. b.	E.	Pass	—	—	2	0
	24	,, ..	,, ..	,,	,, ..	,,	XXIII.	A.	1	A.	2	2	10
22	30	,, ..	Thomas	20	Druggist's assistant	a	X.	A.	2	E.	1	2	10
	30	,, ..	,, ..	,,	,, ..	,,	X. p.	A.	1	E.	1	6	0
	28	,, ..	,, ..	,,	,, ..	,,	XV.	E.	Pass	—	—	2	0
												£76	0

Balance Sheet.—A balance-sheet of an existing Science and Art Evening School, meeting five evenings per week, is given. The following were the entries in the various subjects taught:—

Geometry	36
Machine Construction	253
Mathematics	20
Applied Mechanics	51
Magnetism and Electricity	6
Chemistry—Inorganic, Theoretical	51
Chemistry—Inorganic, Practical	51
Animal Physiology	6
Steam	34
Art (2nd Grade)	122
	630

384 Individual Students made 630 entries.

The school was in a working-class neighbourhood, and the pupils of the first session were many of them altogether unprepared for the work they undertook, as few had received any previous instruction, and consequently the amount of grant earned was the minimum:—

Income and Expenditure of Science and Art Evening School. Session 1891-92.

RECEIPTS.	£	s.	d.	EXPENDITURE.	£	s.	d.
Science and Art Grant	174	12	0	Salaries of Teachers	438	5	0
Fees	38	16	6	Books, &c.	66	19	10
Books, &c., Sold	3	12	11	Apparatus	33	12	10
Technical Instruction Grant	359	13	7	Fuel and Light	30	0	0
				Repairs to Furniture	2	10	3
				Examination Papers	5	7	1
	£576	15	0		£576	15	0

With regard to the amount received for fees, it should be explained that a large number of holders of leaving certificates were admitted without payment.

Libraries.—When possible, it is desirable that there should be in connection with the school a small reference library. The following books (science) were selected for such a school library:—

	s.	d.
Agricultural Chemical Analysis, P. F. Frankland (Macmillan)	7	6
Agricultural Practice, Principles of, J. Wrightson (Chapman)	5	0
Astronomy, Elementary Lessons in, J. N. Lockyer (Macmillan)	5	6
Atomic Theory, A. Wurtz (Paul)	5	0
Chemical Philosophy, W. A. Tilden (Longmans)	4	6
Chemical Theory, History of, A. Wurtz (Macmillan)	6	0
Chemistry and the Allied Branches, Dictionary of, 2 vols., H. Watts (Longmans)	84	0
Chemistry, Dictionary of Applied, 2 vols., T. E. Thorpe (Longmans)	84	0
Chemistry, Experimental, Part I., J. E. Reynolds (Longmans)	1	6
Chemistry, Experimental, Part II., J. E. Reynolds (Longmans)	2	6
Chemistry, Experimental, Part III., J. E. Reynolds (Longmans)	3	6
Chemistry, Experimental, Part IV., J. E. Reynolds (Longmans)	4	0
Chemistry, History of, Meyer's (Macmillan)	14	0
Chemistry, Inorganic, Watts (Churchill)	9	0
Chemistry, Inorganic and Organic, C. L. Bloxam (Churchill)	18	0
Chemistry, Metals, Vol. II., Part I., Roscoe and Schorlemmer (Macmillan)	18	0
Chemistry, Metals, Vol. II., Part II., Roscoe and Schorlemmer (Macmillan)	18	0
Chemistry, Metals, Vol. III., Parts I-V., Roscoe and Schorlemmer (Macmillan)	99	0
Chemistry, The Non-Metallic Elements, Roscoe and Schorlemmer (Macmillan)	21	0
Chemistry, Organic, Watts and Tilden (Churchill)	10	0
Chemistry, Wislicenus's Organic, Strecker (Paul)	12	6
Chemistry, Outlines of General, Ostivald's (Macmillan)	10	0
Chemistry of the Sun, J. N. Lockyer (Macmillan)	14	0
Chemistry, Quantitative Analysis, W. N. Hartley (Macmillan)	5	0
Chemistry, Solutions, W. Ostivald (Longmans)	10	6
Chemistry, Theories of, Meyer (Longman)	18	0
Coral Reefs, Structure and Distribution of, C. Darwin (Smith)	8	6
Electricity, Modern Views of, O. J. Lodge (Macmillan)	6	6
Electricity and Magnetism, Natural Philosophy, A. P. Deschanel (Blackie)	4	6
Electricity for Public Schools and Colleges, W. Larden (Longman's)	6	0
Evolution, Chapters on, A. Wilson (Chatto)	7	6
Geological Map of British Isles, Sir A. C. Ramsay (Stanford)	17	3
Geological Sketches at Home and Abroad, A. Geikie (Macmillan)	10	6
Geology, Student's, E. C. Lyell (Murray)	9	0
Geology, Text Book of, A. Geikie (Macmillan)	28	0

Geometry and Projection, Practical Plane, Vol. I., Text, H. Angel (Collins)	4	0
Geometry and Projection, Practical Plane, Vol. II., Plates, H. Angel (Collins)	6	0
Heat considered as a Mode of Motion, J. Tyndall (Longmans)	12	0
Heat, Natural Philosophy, A. P. Deschanel (Blackie)	4	6
Hygiene, A Manual of Practical, E. A. Parkes (Churchill)	18	0
Hygiene and Sanitary Science, G. Wilson (Churchill)	10	6
Hygiene School, A. Newsholme (Sonnenschein)	2	6
Light, J. Tyndall (Longmans)	5	0
Light, Theory of, T. Preston (Macmillan)	15	0
Machine Drawing and Design, W. Ripper (Percival)	25	0
Mechanics, Hydrostatics, &c., Natural Philosophy, A. P. Deschanel (Blackie)	4	6
Mechanics, Principles, T. M. Goodeve (Longmans)	6	0
Metallurgy, 2 vols., W. H. Greenwood (Collins)	6	6
Metallurgy, Elements of, J. A. Phillips (C. Griffin)	36	0
Metallurgy, Introduction to, R. Austin	7	6
Meteorology, Elementary, R. H. Scott (Paul)	5	0
Mineralogy and Petrography, Manual of, J. D. Dana (Paul)	8	6
Origin of Species, C. Darwin (Murray)	6	0
Philosophy, Natural, Todhunter's, 2 vols.	7	0
Physiography, First Principles of, J. Douglas (Chapman)	6	0
Physiological Chemistry, A Text-book of, A. Gamgee (Macmillan)	18	0
Physiology, Handbook of, W. M. B. Kirke (Murray)	14	0
Physiology, Notes on, H. Ashby (Longmans)	5	0
Rock History, C. L. Barnes (Stanford)	6	0
Senses of Man, The Five, J. Bernstein (Paul)	5	0
Sound, J. Tyndall (Longmans)	10	6
Sound and Light, Natural Philosophy of, A. P. Deschanel (Blackie)	4	6
Spectrum Analysis, Roscoe and Schuster (Macmillan)	21	0
Spectrum Analysis, Studies in, J. N. Lockyer (Kegan Paul)	6	6
Volcanoes, J. W. Judd (Paul)	5	0
Water Analysis, Wanklyn and Chapman (Paul)	5	0

CHAPTER VI.

MANUAL INSTRUCTION IN WOODWORK.

The Royal Commissioners on Technical Instruction, who issued their first report in 1882, gave prominence to the subject of Manual Instruction in connection with our Elementary Schools. One of the conclusions that the Commissioners came to was that the instruction in the use of tools during the elementary school age, besides being of service to every child, whether destined to become a mechanic or not, will tend, in the former case, to facilitate the learning of a trade, though it may not actually shorten the necessary period of apprenticeship. The Commissioners add that they would be glad to see this kind of manual instruction introduced into some of our Elementary Schools.

In the United States, and in all Continental countries where public education has received encouragement at the hands of the State, it has come to be universally recognised that no scheme of instruction is complete which relies entirely on book learning. The education of the hand and eye will in the future play an important part in the instruction given in Primary and Secondary Schools. Where wise systems of manual instruction have been introduced, good results have invariably been attained. This is true, not only in the case of manual instruction in woodwork in Boys' Schools, but also in Girls' Schools, where cookery, laundry work, &c., have been taught. Ordinary school lessons are easily and more intelligently mastered by pupils who have a regular course of instruction in manual work than by those who do not enjoy such an advantage.

Habits of observation are acquired, self-reliance is practically taught, and true ideas of the dignity of labour are inculcated at an age when the mind is most capable of being trained. One of the greatest authorities on manual instruction, Dr. C. M. Woodward, of the St. Louis Manual Training School in the United States, gives the following statement of the fruits of manual training, which I have pleasure in quoting from his book, entitled "The Manual Training School," published by Messrs. D. C. Heath and Co., of Boston, U.S.A. :—

> The value of manual training, when properly combined with literary, scientific, and mathematical studies, will be shown in the following ways :—
>
> 1. Science and mathematics will profit from a better understanding of forms, materials, and processes, and from the readiness with which their principles may be illustrated.
>
> 2. Without shop work drawing loses half of its value.
>
> 3. Correct notions of things, relations, and forces, derived from actual handling and doing, go far towards a just comprehension of language in general—that is, manual training cultivates the mechanical and scientific imagination, and enables one to see the force of metaphors in which physical terms are employed to express metaphysical truths.
>
> 4. Manual training will stimulate a love for simplicity of statement, and a disposition to reject fine-sounding words whose meaning is obscure.
>
> 5. It will awake a lively interest in school, and invest dull subjects with new life.
>
> 6. It will keep boys and girls out of mischief, both in and out of school.
>
> 7. It will keep boys longer at school.
>
> 8. It will give boys with strong mechanical aptitudes, and fondness for objective study, an equal chance with those of good memories for language.
>
> 9. It will materially aid in the selection of occupations when school life is over.

10. It will enable an employer of labour to better estimate the comparative value of unskilled and skilled labour, and to exercise a higher consideration for the labouring man.

11. It will raise the standards of attainments in mechanical occupations, and invest them with new dignity and worth.

12. It will increase the bread-winning and home-making power of the average boy, who has his bread to win and his home to make.

13. It will stimulate invention. The age of invention is yet to come, and manual training is the very breath of its nostrils.

14. We shall enjoy the extraordinary advantage of having lawyers, journalists, and politicians with more correct views of social and national conditions and problems.

15. It will help to prevent the growth of a feeling of contempt for manual occupations and for those who live by manual labour.

16. It will, to a certain extent, readjust social standards in the interest of true manliness and intrinsic worth.

17. It will accelerate the progress of civilisation by greatly diminishing the criminal and pauper classes, which are largely made up of those who are neither willing nor able to earn an honest living.

18. It will show itself in a hundred ways in the future homes of our present pupils—on the one hand, in the convenience and economy of useful appliances; on the other, in evidences of good taste in matters of grace and beauty.

I now purpose to deal briefly with the different systems of manual training, and their special features.

I.—THE AMERICAN SYSTEM

Aims at giving boys a liberal education in the use of tools, extending through several different shops, and embracing drawing, woodwork, forging, fitting, &c. The aim of manual instruction, as understood by the highest anthorities in the United States, is to make it a feature of general education, not for a trade or profession. No saleable articles are made, as this would make it impossible to form a systematic and progressive series of lessons. It is, consequently, not expected that every boy who attends the courses will become a mechanic, but there is reason to believe that the boy's experience in the school will clearly indicate whether he is fit to become a mechanic or not. The class teaching principle is followed.

II.—THE FRENCH SYSTEM

Is a system of trade schools for apprentices, where the pupils are taught the trade they intend to follow, it being the opinion of those who uphold this system that it is the duty of the State to undertake the trade instruction of the French artisan. The French system is not suitable for English schools, and I believe it to be politically unsound and unjust. Trade instruction should not be given in State-aided schools.

III.—THE SWEDISH SYSTEM.

This system is known by the name of Slöjd (Sloyd), and is based on a series of eighty-eight exercises in working with special tools. The system is not sufficiently practical for English boys, and must be looked on rather in the light of an accomplishment than a serious part of education.

Scheme for Day and Evening Schools.—The rules of the Science and Art Department issued in 1890 will very largely mould the kind of manual instruction likely to be given in our Day and Evening Schools, so far as boys are concerned, and although the Department's scheme embraces ironwork as well as woodwork, it will be in the latter that the bulk of the instruction will undoubtedly be given. The instruction, although it may be given in the evening, must, if it is to be the means of earning grant, be given to boys on the rolls of a public Elementary School (where drawing is taught) and of organized science schools. If given in the daytime it must be outside the 20 hours of secular instruction in other subjects required by the Code of the Education Department.

The Science and Art Department have issued the following general directions as to the course to be followed:—

"The Lords of the Committee of Council on Education desire to leave the managers of schools as free as possible in formulating the course of manual instruction to be given under the minute of the 5th June, 1890, for grants from the Department of Science and Art; provided that this course be adapted to teach the use of tools employed in handicrafts, not so much as an initiation in a special handicraft as a disciplinary educational course to train the hand and eye to accuracy by a progressive series of exercises connected with freehand drawing and drawing to scale. As, however, many questions have been asked as to what precise form of instruction should be followed, the following observations have been prepared. They must, however, be considered more in the light of suggestions than regulations. Before commencing to work with tools it will be found very useful to practise the children in cutting out and putting together solid models in cardboard or paper from plane projections (known technically as "nets"). All work with tools must, as stated in the minute, be from careful full-sized drawings prepared by the scholar, the dimensions being taken off this drawing in the workshop. The tools required for the early stages of manual instruction in carpentry are the saw, the plane, and the chisel. The construction and mode of use of these tools, the proper method of sharpening them and of keeping them in good working order, should form the subjects for preliminary lessons. A great variety of exercises may be arranged suited to the strength and ability of the scholar in the use of these tools, which will give an elementary knowledge of the principles of construction and at the same time teach accuracy and carefulness. Clear ideas respecting the various kinds of hard and soft woods, the growth and structure of wood, its fibre and grain, may be given by means of a small collection of the different descriptions of timber commonly used in carpentry, with longitudinal and cross sections.

"The earlier exercises should include some such as the following: Sawing off across the grain of the wood, and sawing along the grain of the wood blocks and strips of given dimensions, taken from a drawing prepared by the boy himself from a model, and having marked on it the required dimensions. Many varieties of tenon and of halved joints can be made in the rough by the saw alone.

"The use of the plane can be commenced by planing small surfaces about nine inches in width and then planing down strips to a given thickness. The planing of two surfaces at right angles to each other, the preparation of a right square prism and of a hexagonal prism, and the construction of a straight edge with bevelled edges, can follow.

"The joints used by carpenters form a valuable series of exercises in which the use of the chisel may be learned such as the various forms of halving, of mortice and tenon, notching, dowelling, dovetailing, groove and tongueing, and scarfing with keys or wedges. The teacher should draw up a complete series of simple and graduated exercises for the early stages, which all the members of the class should execute in turn. No attempts should be made at first to construct small articles of furniture. The proper use of nails and screws should be explained and practised till a fair measure of accuracy has been attained. So far the instruction does not involve the use of curved surfaces. If the workshop is provided with a lathe, another graduated series of exercises might be arranged, to include the simpler forms of turning, but this is not insisted on. In iron the student should begin by chipping a plane surface, then completing it with a file; filing a cube till the sides are accurately plane and parallel to each other; making a hexagonal prism and a hexagonal bolt head will be found good exercise for using the file. Drilling a circular hole in an iron plate, screw cutting, and similar exercises, will enable a lad to take part in the construction of some useful tool for the workshop. Instruction may subsequently be given in the methods of joining metalwork by welding, riveting, &c. The use of cold riveting may be shown even where there is no smith's hearth. A similar series of exercises might be introduced for brass in place of iron. Where facilities exist a lathe for metalwork and a blacksmith's forge will be found extremely useful. There should be not less than four feet run of bench for each boy under instruction, and he should have a space of at least two feet in width in front of the bench. The room should be well lighted and ventilated. There should be a bench and set of tools for the use of each scholar when under instruction, with a proper place in which to keep them, each bench being provided with a wood or metal vice as the case may be. A teacher cannot properly direct the manual instruction of more than about twenty boys at one time.—By order, J. F. D. DONNELLY."

Regulations of the Science and Art Department.—Grants for manual instruction in Elementary Schools and in organised Science Schools are governed by the following rules of the Science and Art Department:—

GRANTS FOR MANUAL INSTRUCTION IN ELEMENTARY SCHOOLS AND IN ORGANISED SCIENCE SCHOOLS.

1. Grants are made by the Department of Science and Art towards the maintenance of classes for manual instruction in connection with Elementary Schools in which drawing is taught under the foregoing rules (Form 1,294 Art); or in connection with organised Science Schools under § 27, p. 35, of the Science and Art Directory.

2. These grants are subject to the conditions laid down in paragraphs 4, 5, and 21 of the foregoing rules relative to grants for drawing in Elementary Schools.

3. The instruction must be (*a*) carried on continuously throughout the school year for two hours weekly; (*b*) in the use of the ordinary tools used in handicrafts in wood or iron; (*c*) given out of school hours* in a properly-fitted workshop; and (*d*) connected with the instruction in drawing—that is to say, the work must be from drawings to scale previously made by the scholars.

4. The instruction may be given by one of the regular teachers of the school if he is sufficiently qualified; if not, he must be assisted by a skilled artisan.

5. The work of the class will be examined by the local inspector of the Department, accompanied, if necessary, by an artisan expert on the occasion of his visit to examine in drawing.

6. If it appears that the school is properly provided with plant for instruction, and that the teaching is fairly good, a grant of 6s., or, if excellent, of 7s., will be made for every scholar instructed, provided (*a*) that he has passed the 4th Standard (Code); (*b*) that he has received manual instruction for at least two hours a week for 22 weeks during the school year; (*c*) that a special register of

---

* This condition will be held to be satisfied if the time-table of the school shows that for every child in the school 20 hours in each week, irrespective of the time assigned to the manual instruction for which a grant is claimed from the Department of Science and Art, are given to the other subjects prescribed by the Codes of the English and Scotch Education Departments.

attendance is kept; and (*d*) that each scholar on whom payment is claimed is a scholar of the day school, and has attended with reasonable regularity. The grant may be reduced or wholly withheld at the discretion of the Department if it appears that the plant is insufficient or that the instruction is not good.

7. The managers of the school must inform the Department of Science and Art as soon as manual instruction is commenced in connection with their school. (Form No. 620.)

8. If the instruction for which the grant is made be for a period other than a year, the grant will be increased or diminished by one-twelfth for each month more or less than a year.

9. In an organised Science School the grant for manual instruction can only be earned on account of a student who has made 250 attendances and been presented at the Science and Art Examinations of the year.

Examinations.—These will be conducted by the local inspector of drawing appointed by the Science and Art Department, and in the case of ordinary Elementary Schools will be held at the same time as drawing examinations take place. In the case of organised Science Schools a special date will, no doubt, be fixed, seeing that the local inspector has no cognisance of the drawing in such schools.

Hints on the Organisation of Classes.—Classes under one teacher should certainly not number more than twenty pupils. If the Manual Instruction School is attached to a large school it would be desirable to give the teacher an artisan assistant, and then thirty-five to forty pupils might be instructed at one time. The artisan would of course work the usual hours of a joiner, and in the time outside the hours of actual instruction be usefully employed in keeping tools in order, setting out work, and sawing into suitable lengths the timber required by the pupils. Considerable waste will take place if care is not exercised in the use of timber; an accurate account should be kept of the amount used, and an inventory accurately posted of the various tools in use. The teacher must see that all tools are put in their proper place at the close of the lesson. Rooms for manual instruction are not covered by ordinary fire policies for Public Elementary Schools, and the insurance company insuring the school where manual instruction is given must be duly informed of the fact, and particulars should be endorsed on the policy—otherwise in case of a fire occurring at the school the liability of the company would no doubt be open to challenge. With proper gas arrangements and regular removal of shavings no serious difficulty need be experienced with the insurance company, provided these injunctions are adhered to.

Teachers.—The best master of the Manual Instruction School should be undoubtedly one who, in addition to being a skilled teacher of a public elementary school, has had the necessary workshop instruction, and is fully competent to teach drawing and its application. As the subject of manual instruction is in its infancy in this country, such teachers have yet to be trained. The City and Guilds of London Institute now offer facilities for teachers to obtain certificates in woodwork, and all large school authorities would be wise if they followed the example of the Manchester School Board, and proceeded at once to open such classes in their several districts. Full particulars as to the mode of conducting such classes will be found under the heading "Scheme for Teachers' Certificates," on pages 149-151. On the subject of teachers of manual work I cannot do better than in conclusion quote the opinion of two authorities whose words will command respect. Professor Ripper says: "The teacher must be a man whose heart is in his work, and one who will create interest and enthusiasm among the pupils. Accordingly he must not be the least intelligent or the worst-paid member of the staff. Better no workshop at all than a cold, half-hearted instructor." Dr. Woodward says: "Good teachers are, of course, the most valuable part of a school's outfit. In this respect the Manual Training School is not singular. The broader his training and culture, the better the teacher, in the shop as well as elsewhere. Above all, the shop-teacher should know fairly well the whole course of the school, particularly in drawing and shop work. Every teacher should be able to take the point of view of those whom he teaches, and to enter into hearty sympathy with them—to see with their eyes, to judge from their limited experiences, to see beforehand just the mistakes they will make, and the difficulties they must meet and overcome. Admit no narrowness to the shop. While recognising the manliness of intelligent skill in every field, do not allow any unworthy tricks of a trade to degrade the tone of the school. At present, good shop teachers are scarce. As a rule, the reputed fine workmen of twenty years' experience, who learned their trade in the old-fashioned way, are quite unsuitable for manual training schools. They find it impossible to adopt our methods and to appreciate our aims. Unless a boy expects to be a blacksmith, they cannot understand why he should care to learn the principles of forging; and what can be the object of tool-work of any sort, except to make something of use? For a teacher, give me first a graduate of a manual training school, who has subsequently taken a more advanced course in a polytechnic or college work. If such cannot be had give me a young teacher who has had a few terms at a manual institute, and who has caught the spirit while acquiring the art of manual training. Do not underrate the position, and give the teacher less credit or less pay than those in other departments. It will be found that a higher order of intelligence and skill in more than one field is needed for a successful shop teacher. The most essential thing, perhaps, is the divine faculty of teaching. The ability to do work one's self is no evidence of one's ability to teach it. He must have a logical analytic mind, and he must be able to subdivide the steps of progress, so as to bring the separate intervals of advance just inside the capacity of his class. The demands of the hour must be seen to be reasonable, requiring vigorous effort, but not exceeding one's strength. The teacher is not to carry his pupils—he is only to show them where and how to climb. But this is the old, old story. If teaching is a science, its methods are such as can be understood with thoughtful study; and the substance of what I would say is that manual education and manual teachers should be rated and secured as other educations and other teachers are rated and secured."

Workshops.—The manual instruction room should be a well lighted and properly warmed and ventilated apartment, having, if possible, a room for teaching drawing attached, with separate accommodation for lumber. On page 255 I give a ground plan of the room for manual instruction in woodwork, arranged for 10 pupils. The particulars are given in sufficient detail to be self-explanatory. If the room is part of the school building, I would propose that it might, with its accessory accommodation, form part of a well-lighted basement floor, as shown in the suggested arrangement for a higher grade school on page 185 of this Manual. In such a case the floor should be formed of wood pavement.

Benches.—It is recommended that the manual instruction room should be furnished with single benches, one for each pupil. In the majority of cases these benches will be used by several pupils during the day, and lockers are not needed, as in the case of a pupil having his own set of tools. I have given on page 256 a detailed sketch of the best form of single bench I know. This bench should be made in quantities at 36s. each, to the specification given.

Tools and fittings.—The following will be required for a school of 10 pupils. The tools should be of the best manufacture and selected by a competent person. The prices quoted are for first-rate tools. The first cost of fitting-up the school of this size, including benches, &c., would be about £36:—

		£	s.	d.
	Bench Sets.			
	10 Jack Planes, at 4s. 6d.	2	5	0
	10 Smoothing Planes, at 3s. 6d.	1	15	0
	10 Marking Gauges, at 5½d.	0	4	7
	10 Ebony Squares, 6in., at 1s. 9d.	0	17	6
	10 Screwdrivers, 12in. (Lond. patn.), at 11¾d.	0	9	9½
	10 Rules, 18in., at 8d.	0	6	8
	10 Hammers (No. 3 Warrington), at 1s. 4d.	0	13	4
	10 Wing Compasses, Lancs., 6in., at 1s. 8d.	0	16	8
	General Racked Tools.			
Saws :	2 Hand Saws (panel), 24in., at 4s. 6d.	0	9	0
	2 Hand Saws (rip), 24in., at 4s. 6d.	0	9	0
	4 Tenon Saws (iron backs), 12in., at 3s.	0	12	0
	2 Dovetail Saws (iron backs), 10in., at 3s. 2d.	0	6	4
	1 Compass Saw, 16in., at 1s. 6d.	0	1	6
	1 Bow Saw, 14in., at 4s. 3d.	0	4	3
Chisels :	5 1in. Firmer Chisels, at 9½d.	0	3	11½
	2 Sets Firmer Chisels, ⅛in., ¼in., ⅜in., ½in., ⅝in., ¾in., ⅞in.	0	4	3
	1 Set Registered Chisels, ¼in., ⅜in., ½in., ⅝in., ¾in.	0	5	3
Gouges :	6 1in. Gouges at 11d.	0	5	6
	1 Set Gouges, ⅜in., ½in., ⅝in., ¾in	0	2	2
Files :	3 Flat Medium, 12in., at 1s.	0	3	0
	3 Half Round, 10in., at 10d.	0	2	6
	3 Half Round Rasps, 10in., at 10d.	0	2	6
	2 Round Files, 10in., at 10d.	0	1	8
Planes :	1 Trying Plane	0	6	6
	1 Rebate Plane	0	2	10
	1 Router, or old woman's tooth	0	1	9
General :	1 Brace and Set of Bits (American)	0	15	0
	2 Cutting Gauges, at 11d.	0	1	10
	1 Mortise Gauge	0	4	6
	4 Beech Mallets, at 1s. 2d.	0	4	8
	1 Pair of Pincers (Tower)	0	2	0
	1 Set of Punches	0	0	8
	1 Set of Five Gimlets (Twist)	0	1	0
	1 Set of Bradawls	0	1	0
	4 Spokeshave (English, wooden), at 9½d.	0	3	2
	2 Steel Scrapers	0	0	5
	Forward	13	6	9

	£	s.	d.
Forward	13	6	9
1 Drawer Knife, 10in	0	1	9
2 Bench Holdfasts, at 4s. 3d	0	8	6
2 Hones and Slips (Welsh), at 2s. 8d. and 5d	0	6	2
2 Oilcans, at 5d.	0	0	10
1 Axe (Kent), at 2s. 6d	0	2	6
2 Slide Bevels, 9in., at 2s. 3d.	0	4	6
1 12in. Square (Ebony), at 3s.	0	3	0
2 Scribers, at 4½d.	0	0	9
2 Saw Benches	0	2	6
1 Square Shooting Board, 5s	0	5	0
1 Grindstone, 24in. by 3½in.	1	10	0
1 Cork Rubber	0	0	3
1 Glue-pan and Brush (medium), 1s. 5d. and 3d.	0	1	8
1 Quire of Sandpaper, each of following numbers, at 1s. (*a*) Middle 2; (*b*) Fine 2; (*c*) No. 1 (Oakey's)	0	3	0
10 Work Benches, birch tops, 36s.	18	0	0
1 Boring Bench, birch top, £1	1	0	0
Above for Carpentry.			
For Slojd, add 10 Slojd Knives, at 9d.	0	7	6
„ 2 Spoon Irons, at 6d	0	1	0
Total	£36	5	8

Timber, and Prices per square foot, 1*in. thick.*

Quantity required for Class of ten boys for one year's work, working three hours a week :—

Pine Deal Boards.

4	boards,	12ft. ×	10in. ×	2in.	at 3d.	per square foot,	1in. thick.
6	„	„	„	1½in.	„	„	„
6	„	„	„	1¼in.	„	„	„
6	„	„	„	⅞in.	„	„	„
6	„	„	„	⅝in.	„	„	„

Chestnut.

1	board,	12ft. long,	2¼in.	at 4d. to 6d.	per square foot,	1in. thick.
1	„	„	1½in.	„	„	„
2	„	„	1in.	„	„	„
2	„	„	⅝in.	„	„	„

Oak.

1 board, 12ft. long, 1½in. at 4½d. to 6d. per square foot, 1in. thick.

Beech.

1 board, 12ft. long, 1in. at 3d. to 4d. per square foot, 1in. thick.

Total cost for timber, £5 10s.

Grants.—As set forth in the Regulations of the Science and Art Department, quoted in full on page 142 of this

Manual, the grants for each scholar instructed are 7s. when the school is classed "Excellent," and 6s. when the school is classed "Good." This is, of course, in respect of the manual instruction, and on condition that the requirements of the Science and Art Department have been duly complied with.

Scheme of Teachers' Certificates.—Classes may be conducted for teachers of Public Elementary Schools for certificates in woodwork by a responsible committee in any town. Application should be made to Sir Philip Magnus, Secretary City and Guilds of London Institute, Exhibition Road, South Kensington, London, S.W. In Manchester we have such a class in operation. It meets on Saturday morning, from 10 to 12, and is taught by a master holding a certificate in woodwork. The session extends from September to June, and the fee charged is 10s. 6d. for the course. Examination fees to be paid by the candidates.

The following is the official notice issued by the City and Guilds of London Institute, relative to this examination:

EXAMINATION FOR ELEMENTARY TEACHERS' CERTIFICATES IN WOODWORK.

With the view of certifying to the efficiency of teachers of Public Elementary Schools to give instruction in woodwork, in accordance with the provisions of the Code (1890), the City and Guilds of London Institute is prepared to issue certificates to qualified teachers of Public Elementary Schools on the following conditions:—

1. The candidates will be required to give evidence of having regularly attended, during each of two sessions, a course of at least twenty practical woodworking lessons, in a school or class registered by and under an instructor approved by the Institute. In order that a class may be registered, it must be under the direction of a Committee of a School Board, or Municipal Council, or Technical School, or other public body. Each lesson should be of at least two hours' duration.

2. The candidates will further be required to pass an examination at the end of each year's course, to be conducted by examiners appointed by the Institute, and to pay a fee of 5s. for each examination.

FIRST YEAR'S EXAMINATION.

The examination to be held at the end of the first year's course will consist of (1) Drawing, (2) Practical exercises in wood-working. Provision for holding the examinations and arrangements for supervision must be made by the committee of each school. Either tools must be provided for the practical examinations, or the candidates must be required to bring them.

1. WOOD-WORKING.—Candidates will be provided with suitable sawn pieces of wood, and will be required to reduce them by the plane, saw, or chisel to any simple forms shown by dimensioned sketches. They will also be required to construct from such pieces of wood any of the simpler joints, or any very simple combination of such joints to dimensioned sketches.

2. DRAWING.—Candidates will be required to show a knowledge of drawing to scale and projection, and ability to draw to scale, in plan and elevation, some of the simpler joints, such as housing, angle bridle, or open mortice and tenon, dovetail halving and lap halving; also very simple frames or combinations of joints.

To pass the examination, candidates must satisfy the Examiners in each of the subjects 1 and 2. The number of marks will be apportioned as follows: Wood-working, 250 marks; Drawing, 100 marks. The practical wood-working examination will be held on Saturday, June 3rd, from 2 till 6 p.m. Drawing examination, June 7th, 7 to 10 p.m.

When the workshop will not accommodate all the candidates at one time, they may be examined, under suitable conditions, from 10 till 2 and from 2-10 till 6-10, or from 2 till 6 and from 6-10 till 10-10. The drawing examination will be held on Wednesday, June 7th, from 7 till 10 p.m.

FINAL EXAMINATION.

Candidates for the Final Examination must produce a certificate of having passed the First Year's Examination. The Final Examination will consist of more advanced exercises in Wood-working and Drawing, and also of questions on the Technology of Woodwork and Methods of Instruction. The Drawing Examination will be held on Wednesday, June 7th, from 7 till 10 p.m. The Written Examination will be held on Thursday, June 8th, from 7 till 10 p.m. The practical wood-working examination will be held on Saturday, June 10th, from 2 till 6 p.m. but two Examinations may be held when necessary, as in the case of the First Year's Examination.

1. WOOD-WORKING.—Exercises similar to those for the first year, but more difficult. Dimensioned sketches will be given as a guide to what is required. The accuracy of fitting, accuracy of dimensions, and the time taken will be considered in valuing the work done.

2. DRAWING.—Drawing to scale from dimensioned sketches any of ordinary joints used in woodwork, or any simple frames, or simple-framed objects made of wood; hand sketches of simple joints and frames as seen in conventional perspective.

3. THE WRITTEN EXAMINATION will include questions founded on such subjects as the following:—

(1) *Woods.*—Places from which some of the commoner woods are obtained. Their characteristic properties and uses. The general structure of cone-bearing and leafy timber trees. The meaning of seasoning timber. Effects of shrinkage and warping. Identification of specimens of wood. The questions will be limited to oak, ash, elm, beech, mahogany, sycamore, basswood, white deal (spruce), red pine (Scotch fir), yellow pine.

(2) *Tools, &c.*—Description of the construction and mode of using ordinary wood-working tools. Methods of using nails, screws, and glue.

(3) *School Management.*—Fittings and cost of equipment of school workshop. Arrangement of pupils. Character of instruction and sequence of lessons. The special characteristics of Sloyd and of other systems of teaching.

To obtain a certificate candidates must pass in each of the three subjects, 1, 2, and 3. The number of marks will be apportioned as follows: (1) Wood-working, 400 marks; (2) Drawing, 100 marks; (3) Written examination, 100 marks.

The examination will be held at the City and Guilds Central Institution, and in other approved school workshops in London and in the provinces at which the necessary arrangements can be made.

Certificates will be granted on the result of each examination, but the teacher's certificate will be given to those candidates only who have passed the final examination.

WORKS OF REFERENCE.—Barter's "Manual Instruction—Woodwork" (Whittaker and Co.); Goss's "Bench Work in Wood" (Trubner); Wood's "Manual Instruction in Woodwork" (Simpkin, Marshall and Co.); Ward's "Timber Trees" (Macmillan); and "The Oak" (Paul, Trench and Co.); Low's "Solid Geometry," Part I. (Longmans).

CHAPTER VII.

MISCELLANEOUS CLASSES.

I PROPOSE in this chapter to deal, as briefly as possible, with certain classes which may very well come within the scheme of Evening Schools for a district, and which do not fall within the scope of any of the preceding chapters.

Singing Classes.—These I think should, if undertaken, be of an educational character. Mere instruction in part-singing need not be undertaken by a public body charged with the supply of instruction. In most large towns, and in villages of any size, at all events in the North of England, almost every place of worship has its voluntary choir, and in many places there is, in addition, a choral union for teaching singing, to say nothing of important musical societies with more ambitious schemes of work. The only classes we need concern ourselves about are those for pupil-teachers and assistant teachers, which are exceedingly useful when designed to give instruction leading up to the teacher's certificate of the Tonic Sol-fa College. For several years these classes have been successfully carried on in Manchester. The following copy of the usual notice issued gives all necessary particulars :—

SCHOOL TEACHER'S MUSIC CERTIFICATE.—TONIC SOL-FA COLLEGE.

A class for the study and practice of the requirements of this certificate will be commenced at the Roby School, Aytoun Street, Manchester, on Friday, October 2nd, 1891. Time, 7-0 to 8-15 p.m. Fee for the term of 12 weekly lessons, 3s. 6d.

The certificate has been designed by the Tonic Sol-fa College specially for teachers of schools under Government inspection, in order that they may have their qualifications to teach children to sing by note satisfactorily tested and certified. The subjects are based on the Education Code requirements, and embrace memory of tune, modulator pointing, singing from modulator and sight singing, ear tests in tune and time, and musical theory; including also questions as to the order and manner of teaching, and the training of children's voices.

N.B.—Members must either possess the Elementary Certificate, or be prepared to take it early in the course. The teacher will be glad to make arrangements for the examination of those who do not already hold the certificate.

Special Classes for Deaf Mutes.—In Manchester we have an Evening School for Deaf Mutes, where reading, writing, and arithmetic are taught, together with needlework for the girls. It is necessary to have as teacher one who is acquainted with both the aural and lip mode of instruction. The pupils very highly appreciate magic-lantern entertainments, and several have been given during the past winter. The class was established for the benefit of young persons who, suffering from the serious disadvantage of being deaf mutes, only too soon lose the necessarily somewhat limited amount of education they have received at the special schools.

The following is the short announcement issued at the beginning of the session :—

CONTINUATION EVENING SCHOOL FOR DEAF MUTES.

The school will be held at St. Ann's School, Queen Street, Albert Square, Manchester, on Tuesday and Thursday evenings, 7-30 to 9 o'clock, commencing Tuesday, September 15th, 1891. Subjects of instruction: Reading, writing, and arithmetic. Articulation and lip-reading for those who have been taught on the system. Measures will be taken during the session to introduce instruction of a recreative character. Prizes will be given for regular attendance and proficiency. Fees: 3d. per week, or 3s. 6d. per session (September to March).

Teachers' Diplomas and Certificates in Cookery and Laundry Work.—When we commenced the serious extension of Evening School work in Manchester a few years ago we were faced with a serious difficulty in connection with our Girls' Schools—we had no adequate supply of teachers of cookery. It was very soon discovered that the mistresses and assistant mistresses of our Elementary Schools made the best teachers of cookery when they had gone through a special course of training; and it was accordingly determined by the Board that they would set about training their own teachers of cookery. A properly arranged practice kitchen was fitted up in connection with our Central School, and arrangements were made with "The Northern Union of Schools of Cookery," to examine teachers who had received instruction at our centre for cookery teachers. The following particulars relative to these classes supply all the necessary information:—

CLASSES FOR TEACHERS OF COOKERY.

The classes to enable teachers to qualify for cookery certificates are conducted at the Central Board School.

The course of instruction, which will be both practical and theoretical, will extend over about four months.

The classes will be open on Fridays from 7 to 9 p.m., and on Saturdays from 10 a.m. to 1 p.m.

It is the intention of the Board to restrict the classes to teachers engaged in Day or Evening Schools under Government inspection.

Fee, which must be paid in advance, £3 3s. for the course.

The School Board have made arrangements with the Liverpool School of Cookery for the examination of teachers according to the regulations of, and in order to obtain the diploma of, "The Northern Union of Schools of Cookery."

OUTLINE OF SUBJECTS REQUIRED TO BE STUDIED BY CANDIDATES QUALIFYING AS TEACHERS OF COOKERY.

FIRST EXAMINATION.

Description of and construction of kitchen range, open or closed. The process of cleaning a stove and lighting a fire. The process of cleaning all kinds of utensils used in cooking. The principal processes used in cooking. Explanation and description of each. Action of heat in the various processes. Degrees of temperature required. Loss and gain in cooking, &c.

Meats.—Various kinds of meat. Their relative value and constituents. Division of joints in mutton and beef. Parts suitable for roasting, boiling, &c. The cooking of coarse hard pieces of meat, so as to render them tender and nutritious. Rendering fat, clarifying dripping, &c.

Fish.—Different kinds of fish. Their relative values, &c. Fish most suitable for invalids, kinds usually salted, &c.

Cold Meat Cookery.—Various ways of cooking meat (cold) without rendering it indigestible and tasteless.

Vegetables.—The cooking of potatoes, turnips, carrots, parsnips, spinach, Spanish onions, cauliflowers, greens, French beans, haricot beans, peas, &c.

Sickroom Cookery.—Points to be remembered in preparing and serving food for the sick.

The true meaning of economy in cooking. Economy in selecting and preparing food. The arrangement of wholesome, palatable, and economical dinners, the average price per head and number of persons being given.

N.B.—In order to test the candidate's knowledge of the principles on which any dish is prepared, and the important points to be remembered, recipes in household cookery illustrative of the various processes of cooking will be required, including the making of soup with and without stock. Fish, meat, vegetables, pastry (suet and otherwise), milk and other puddings, bread, with yeast and also with barm, and sickroom cookery.

SECOND EXAMINATION.

Food.—The classification of food. Examples of each class. Chemical constituents of each, and function in the body. The processes of digestion, absorption, circulation, and respiration. The elements found in the human body, waste and repair of tissue, &c. The composition of air and water.

Marks are given for work in the practise kitchen for practise in teaching and for theoretical examinations. The power of demonstrating is assessed as "fair," "good," or "excellent."

The foregoing outline is not intended to limit the candidates' studies, but to give some idea of the knowledge required, and to serve as a guide. Candidates are further warned against preparing answers obviously got up by heart and without real knowledge or real understanding of the subject. All mere book-work will be rejected by the examiner.

Candidates will be required to pass (*a*) an examination in theoretical knowledge; (*b*) an examination in practical cookery; and will, during the term, be required to aid in giving at least three demonstration lessons in cookery to a class of children in one of the Manchester Board Schools.

The following books are recommended for reference, and should be studied in the order named:—

THE PROCESSES OF COOKERY AND DOMESTIC ECONOMY.—Books to be studied: "Food and Home Cookery," by Mrs. Buckton, 2s. "Household Management and Cookery," by Tegetmeier, 1s. "Health in the Household," by Mrs. Buckton, 2s.

FOOD—ITS NATURE AND THE KINDS AND QUANTITIES REQUIRED.—Books: "Food," by A. H. Church, 3s. 6d. "The Making of the Home," by Mrs. Barnett, 1s. 6d.

FOOD—ITS FUNCTIONS IN THE BODY, AND THE PHYSIOLOGY OF NUTRITION.—Books: "Food," by A. H. Church. "Physiology," by Dr. M. Foster (Science Primers), 1s. "The Chemistry of Cookery," by Mattieu Williams, 6s.

For the study of the Laws of Heat, and also of the Elements of Chemistry, Macmillan's Science Primers are recommended.

The classes are open to teachers of any Public Elementary School, whether Board or Voluntary. The classes were established in 1889, and 105 teachers have succeeded in obtaining their diplomas.

In 1891 the Education Department issued a circular relative to the qualification of teachers of cookery. The Board took the opportunity of bringing before the Education Department the claims of their classes for full recognition, and this was granted in the following letter received from the Education Department:—

"Education Department, May 23, 1891.

"Sir,—Adverting to your letter of the 25th ultimo, I am directed to state that my Lords understand that your letter refers to the

'Examination Diploma' issued by the Northern Union of Schools of Cookery. They find that the diploma in question does not fall within the scope of the circular to which you refer, and that the examination for it is as searching and complete as the test applied to candidates trained in the Training Schools of Cookery. The Department will therefore continue to accept it for the purposes of the grant, as equivalent to the diploma bestowed on fully-trained teachers.—I have the honour to be, sir, your obedient servant,

(Signed) "J. SYKES.

This letter finally settles the question of the value of the diploma to be obtained at the Board's School of Cookery.

Classes for laundry certificates have also recently been established on the same lines, in order to enable women teachers to obtain the qualification necessary for teaching laundry work in Public Elementary Schools. The course lasts about three months, the instruction being given on Saturday morning. Fee, £1 10s. for course.

Matriculation Classes.—For the benefit of pupils desirous of sitting for the Matriculation Examination of the London University, two evenings per week will be mainly taken up with the following: Classics (one hour), mechanics (one hour), mathematics and English (one hour), French (one hour). The course includes chemistry and natural philosophy, arrangements for which may be made in connection with the Evening Science Classes. In Manchester a fee of 21s. for course (September to March) is charged; and in addition a summer term is arranged for at a fee of 10s. 6d. (April to July). These fees do not include the instruction in science. At the last examination a number of our pupils were in the first division at the examination of the London University.

Class Instruction in Orchestral Music.—Successful instruction is possible under proper conditions. The violin is a very suitable instrument to take up. I would recommend that the classes should be small, not more than fifteen in each. Time of instruction not less than forty minutes. The classes should commence with elementary instruction only, no pupil admitted who is over sixteen years of age. Pupils should be required to provide their own violins and music. As the tonic sol-fa system is so generally taught in day schools, it may be essential to have a preparatory class to teach the old notation, otherwise much valuable time may be lost by the teacher of the violin, through his class not being able to read the music. At the Midland Institute, in Birmingham, instruction is given covering a large number of musical instruments.

The instruction is popular, and seeing that our public orchestras have to depend upon chance for their supplies, the establishment of such classes will do much to develop the practice of music, to say nothing of supplying the needs of the musical aspirations of countless numbers who are desirous of being able to play upon a musical instrument, and whose requirements should not be overlooked.

Pianoforte instruction is given at some schools, but seeing the absolute necessity of each pupil being provided with a separate room, it is not likely that very much can be accomplished in furthering such instruction, even were it desirable.

CHAPTER VIII.

HIGHER GRADE SCHOOLS.

Both sections of the Royal Commission on the Elementary Education Acts, which reported in 1888, recognised the importance of facilities being afforded for higher education in connection with our Elementary Schools. The opinion was expressed that if such instruction was supplied by Higher Grade Schools the principle involved in their addition to our system of education should, if approved, be avowedly adopted. Whilst this was one of the recommendations of the majority of the Commission, certain of the Commissioners, viz., the Hon. E. Lyulph Stanley, Dr. R. W. Dale, Messrs. T. Heller, Henry Richard, M.P., and George Shipton gave it as their opinion—

"That the school provision would not be complete without the more systematic supply of what have been described to us as higher elementary schools. These have been established in many towns, mostly by the school boards, but in some cases by voluntary managers. They are not uniform in type, as sometimes they include all standards, and sometimes they are limited to children in the higher standards. They also usually keep on their scholars for a year or two after passing the 7th standard, and give a mainly scientific education in connection with the South Kensington examinations.

"These schools are an important and necessary element for the completion of the popular schools of the country. They enable the scholars, whose parents are willing to keep them at school till 14½ or 15, to get more thorough teaching than they could possibly get in the ordinary school, where the highest class is probably made up of children in more than one year of school progress. Appliances, too, for the teaching of drawing and of science, and to some extent school workshops, can better be supplied in connection with a few central schools than at the ordinary local schools. That in any school district where the population within a radius of two miles amounts to 10,000 there should be such a higher elementary school, or a higher department attached to an ordinary elementary school, with a curriculum suited to children up to 14 or 15 years of age. In more populous districts these schools should be increased. In districts where, from the sparseness of the population, such schools or departments cannot easily be established, children should be encouraged to continue their education beyond the ordinary school curriculum by the payment of grants, on the report of Her Majesty's inspector that the best arrangements have been made for their efficient instruction, having regard to the difficulties and circumstances of the case, and that they have received such instruction.

"Such an extension of education would be of great value, not only to those who are preparing for the various industries of life, but it would also secure a better class of scholars, who in the rural schools might furnish paid monitors or pupil teachers in aid of the head teacher."

Such Higher Grade Schools have for many years been successfully carried on in Manchester, Birmingham, Sheffield, Nottingham, Leeds, and other large towns. Each of these have varied in character — in some cases the schools are complete, embracing all the standards; others are schools for the higher standards (V. and upwards). In some districts a system of drafting pupils in the higher standards to a Central Higher Grade School is adopted, whilst in others the school either depends upon the locality or upon its own reputation for its supply of pupils. Good Higher Grade Schools are to be found answering the whole of the foregoing descriptions, and consequently it may be assumed that in formulating any scheme for a Higher Grade School each locality must consider its own needs and requirements; but whatever the organisation of the school may be, the principle underlying the instruction in the higher standards will generally be the same. In the scheme set forth in the following pages I do not propose to deal with the lower standards, because the instruction of these will practically be the same in the Higher Grade School which embraces them as in the ordinary Elementary School of which they always form a part. I would like to add, however, that I fully recognise the importance of Higher Grade Schools having their own junior departments. In conducting a successful Higher Grade School it is essentially necessary to take every advantage which is likely to conduce to a steady supply of pupils; and it must not be forgotten that the attendance of pupils in the higher standards will in most districts be influenced by the facilities offered for the instruction of younger children belonging to the same families. I am well aware that some of the leading Higher Grade Schools in the country have no department for juniors, but even such schools as these, which are kept supplied by children who have received their early education in ordinary Public Elementary Schools, would, I am sure, derive benefit by having a portion of their supply coming from such junior departments. Where circumstances permit, it would be well that the department for infants and juniors should either be within the same block of school buildings as the Higher Grade School or immediately adjacent thereto. Where a school-site of sufficient area can be obtained, I would recommend that such a junior department should find accommodation in an independent building, separate provision being made for senior departments for boys and girls.

Schemes of Instruction.—Without going into unnecessary particulars relative to the lower standards of the Higher Grade School, or laying down any hard and fast rule as to the standards which should be included, I think that the whole should be crowned by an Organised Science School, and it will be found a convenient arrangement that such Organised Science School should embrace as far as possible the whole of the children in Standard VII. in addition to those outside the standards. A capitation grant of £1 per head per annum is paid by the Science and Art Department

LIBRARY OF THE UNIVERSITY

for each pupil in an Organised Science School making 250 attendances, and who is presented at the May examinations.

One of the great advantages of this arrangement is that it gives the master greater liberty in drawing up his time-table, and enables him to vary the curriculum, so that whilst there shall be an adequate amount of science and art instruction, other subjects of great importance, such as handwriting, English literature, one or two foreign languages, shorthand, and bookkeeping, shall each receive a proper share of attention. The importance of providing instruction in advanced cookery, laundry work, dressmaking, and household management for the girls should not be overlooked.

In connection with manual instruction in woodwork for boys, there is also a distinct advantage in having Standard VII. in the Organised Science School, as such instruction may be given during school hours. In the case of boys taking manual instruction whilst in attendance at the ordinary Public Elementary School, by the rules of the Science and Art Department it must be given outside the twenty hours of secular instruction reserved by the Code, and consequently either the time needed for recreation or religious instruction must undesirably be diminished.

So far as possible the whole of the teaching should be undertaken by the regular staff of the school, and this staff should be under the control of one head master. In the cases of largely-attended Higher Grade Schools, ample work will be found for a science master, an art master (1st, 2nd, and 3rd grade subjects); and in manufacturing districts there may be also a master who shall take machine construction and drawing. In addition to these there will be the instructor for manual work. Each of these masters is responsible for his own department, but under the direct control of the head master of the school.

The girls in the standards may have their own principal mistress, but seeing that the whole school must work conjointly, and without any possibility of divergent methods of instruction, I think the head master of the school should also have the control of the girls' department.

Organised Science Schools.—The following are the rules of the Science and Art Department for Organised Science Schools:

(*Sections* 27 *to* 32, *Science and Art Directory.*)

27. An organised Science School is one in which the instruction is carried on methodically according to the course specified in sec. 28.

It will depend on circumstances, especially if the student can only attend the Night School, how many subjects he can take up in one year. It is not necessary that any student should take in any one year all the subjects mentioned for that year. But his course must, if the special grants under sec. 31 are to be claimed (see page 165 of Manual), comprise the subjects named below, and they must be taken in the order in which they are stated. It is assumed that before commencing this course the student will have been made acquainted, in the Elementary School, with the elements of arithmetic and the primary conceptions of physical science.

28. The course of instruction is as follows, to which Manual Instruction may be added (see page 142 of Manual):—

FIRST YEAR.

Mathematics (Subject V. First Stage); Freehand Drawing (2nd Grade Art); Practical Geometry (Subject I.); Chemistry, Inorganic (Subject X. First Stage) (see Syllabus, p. 183 S. and A. Directory), with practical work; Physics: Sound, Light and Heat (Subject VIII. First Stage); or Magnetism and Electricity, frictional and voltaic (Subject IX. First Stage); or Physiography (Subject XXIII. First Stage).

SECOND YEAR.

The Elementary Stage of Mechanics VI*a* or *b*; Physics: Sound, Light and Heat (Subject VIII. First Stage); or Magnetism and Electricity, frictional and voltaic (Subject IX. First Stage); or Physiography (Subject XXIII. Second Stage); Mathematics (Second Stage and, if possible, Fourth Stage, Subject V.); Practical Geometry (Plane and Solid), (Subject I.); Chemistry, Inorganic (Subject X. Second Stage), with practical work; Human Physiology, if possible, (Subject XIV. First Stage).

The instruction in the subjects of the second year must be kept distinct from that in those of the first year. The student should also, if possible, during the first and second year, work at mechanical drawing as provided for in sec. 29 of S. and A. Directory.

Any slight modifications of the foregoing course of instruction which it may be desired to make should form the subject of special application, when they will be considered on their merits.

THIRD YEAR.

29. The work of this year must depend so much on the student's aptitude, and the progress he has made in the preceding course, that it is impossible to lay down the subjects for the third year's course with any definiteness. It is essential that before continuing his course, or commencing new subjects, he should have a sound knowledge of the first stage of mathematics, the elementary stage of mechanics VI*a* or *b*, physics, and chemistry; that he should have such a knowledge of practical geometry and mechanical drawing as to be able to draw and read simple plans, elevations, and sections with readiness, and that he should have sufficient facility in freehand drawing to make clear and neat explanatory diagrams.

30. When these subjects have been mastered, the student should, while continuing his studies in mathematics, take up the first stage of human physiology, if he has not already done so. He will then be in a position to specialise his studies with advantage in one of the following groups, according to his requirements, taking up, for instance—

(1) Physics and chemistry and metallurgy.

(2) Theoretical and applied mechanics, steam, and machine construction and drawing.

(3) Theoretical and applied mechanics, and building construction and drawing.

(4) Biology.

(5) Physiography, geology, mineralogy, and mining.

The student may also with advantage continue his freehand drawing and practical geometry.

Note.—The foregoing course is framed to lay the foundation of a thorough and systematic scientific training. This will explain the omission of certain subjects which are not to be considered unimportant because they find no place in the course. Thus, systematic botany will be found of very great use as a preliminary to the study of natural science. As such it may be taught in elementary schools before this course is commenced. But further than that, it cannot be considered a step in a systematic course till the student takes it up as a portion of biology in his third year.

31. A day-school organised to give the foregoing courses of instruction receives, in addition to payments on results, £1 on account of each student who attends the full course of instruction, is present during 250 attendances of the school, and passes in one of the subjects of science laid down for his year in which he has not previously passed, or obtains a higher success in a subject in which he has already been successful.

Provided that (1) an application be made on Form No. 122, before the 1st of August in each year, submitting a time-table of the school, framed in accordance with the foregoing rules; that it be approved by the Department; and that a copy of such approved timetable be conspicuously exhibited in the classroom; (2) a special register (Form No. 486*d*) be kept, in which not more than two attendances are counted in one day; and (3) at least 15 hours of instruction per week allotted to subjects taken under the Science and Art Department.

The school year of the Organised Science School is held to terminate on the 31st July.

32. A night school in the same way receives 10s. on account of each student who attends the full course of instruction, is present during 60 attendances of the school, and passes in one of the subjects of study laid down for his year—

Provided that (1) an application be made before the 1st August in each year, submitting a time-table of the school, framed in accordance with the foregoing rules, and that it be approved by the Department; (2) the school be open 80 evenings at least in the year; and (3) a special register (Form No. 486*d*) be kept, in which not more than one attendance is counted for each student on each evening for the attendance grant.

The school year is held to terminate on the 31st July.

A school claiming this special grant must be organised so as to give the full course specified. It will not be sufficient to provide for the subjects of the first year only. The attendance grant cannot be claimed on account of scholars on the register of a school under the English or Scotch Education Departments, or the Commissioners of National Education, Ireland.

Art Instruction.—The age to which pupils may be kept in the Organised Science School and the systematic instruction they will have received may lead up to very satisfactory work being done in second and third grade art work. The school should have its properly equipped room for drawing from the cast. In manufacturing districts the art instruction should take a distinct character suitable for the particular trade of the district. For instance, when there is calico-printing, the designing of patterns should be arranged suitable for the fabrics made in the factories of the district. The same is true of designs for wall paper, floor tiles, carpets, &c. A room for clay modelling is a very desirable adjunct to the Art School. As already stated, although the instruction should in its essential particulars have a distinctly practical bearing, there is no reason why the artistic side of the instruction should be wholly neglected. Landscape painting in water colours and oils may receive encouragement at the hands of senior pupils, and in the summer months the teacher may be able to foster outdoor sketching.

Literature.—In the upper classes of the Organised Science School of the Higher Grade School valuable opportunities present themselves for the study of pure literature. Care should be exercised in the prose and poetry selected. The danger of all science teaching is that the mind is trained to look for a result which may, by experiments correctly worked, be attained; and success in working experiments may tend to the development of a prig, instead of a truly-educated man. Here literature proves a powerful antidote, and its importance in all well-ordered courses of instruction is of the highest value.

Commercial Subjects.—As only in a comparatively few cases will the pupils of the Higher Grade School follow in after life a calling where the science instruction they have received will play an important part, it is essential that such subjects as commercial letter writing, shorthand, and bookkeeping should receive due attention. In the upper classes of the Organised Science Schools the comparative freedom of choice in arranging the subjects of instruction will enable the head master to make a feature of the commercial instruction of the school. It is also an undoubted fact that the introduction of such instruction will very largely conduce to popularise the school with many parents who may not be able to see the practical advantage of keeping their children at school past the compulsory age, simply to receive their additional instruction merely in the subjects of science and art taught in connection with South Kensington, particularly as such a course will tend to the scholars losing touch with the essential education embraced in the instruction they have received in the standards, and consequently may unfit them for the ordinary work of the counting-house or warehouse. The pupils should be encouraged to present themselves for examinations conducted in these special commercial subjects. Those of the Society of Arts are held in deservedly high repute. It is a pity, however, that the fee charged is somewhat prohibitive in the case of pupils attending day schools of the class I am now dealing with. I think the Society of Arts might well take into consideration the question of compounding for the fees in the case of a school of any large dimensions. At least two foreign languages (French and German for preference) should be taught in the school.

Time Tables.—The following are the time tables now in use in the Manchester Central Higher Grade Board School:—

CENTRAL BOARD SCHOOLS, BOYS' DEPARTMENT.

TIME-TABLE, ELEMENTARY DIVISION.

		Morning.						Afternoon.				
	Class.	9 to 9-50.	9-50 to 9-55.	9-55 to 10-5.	10-5 to 10-45.	10-45 to 11-15.	11-15 to 12.	2 to 2-10.	2-10 to 2-20.	2-20 to 3-10.	3-10 to 4.	4 to 4-30.
Monday.	1	Scripture and Religious Instruction.	Registers finally closed.	Singing from Notes. Time Tests, &c.	Arithmetic	Writing	Grammar	Assemble.	Registers called and finally closed.	Mensuration	Reading	Drill
	2				Arithmetic	Grammar	Reading			Algebra	Writing	Drill
	3				Geography	Arithmetic	Grammar			Arithmetic	Reading	Exercise
	4				Geography	Algebra	Arithmetic			Reading	Writing	Exercise
	5				Arithmetic	Grammar	Reading			Algebra	Writing	Exercise
	6				Geography	Arithmetic	Grammar			Arithmetic	Reading	Exercise
	7				Grammar	Geography	Arithmetic			Reading	Writing	Exercise
	8				Repetition	Arithmetic	Reading			Arithmetic	Grammar	Exercise
Tuesday.	1	Scripture and Religious Instruction.	Registers finally closed.	Singing from Notes. Time Tests, &c.	Arithmetic	Grammar	Composition	Assemble.	Registers called and finally closed.	Algebra	Reading	Exercise
	2				Arithmetic	Geography	Mensuration			Reading	Writing	Exercise
	3				Geography	Algebra	Arithmetic			Reading	Writing	Drill
	4				Algebra	Composition	Grammar			Arithmetic	Reading	Drill
	5				Arithmetic	Geography	Mensuration			Reading	Writing	Exercise
	6				Geography	Algebra	Arithmetic			Reading	Writing	Exercise
	7				Repetition	Arithmetic	Reading			Arithmetic	Grammar	Exercise
	8				Composition	Geography	Arithmetic			Reading	Arithmetic	Exercise

TIME-TABLE, ELEMENTARY DIVISION—*Continued.*

		MORNING.						AFTERNOON.				
	Class.	9 to 9-50.	9-50 to 9-55.	9-55 to 10-5.	10-5 to 10-45.	10-45 to 11-15.	11-15 to 12.	2 to 2-10.	2-10 to 2-20.	2-20 to 3-10.	3-10 to 4.	4 to 4-30.
WEDNESDAY.	1	Scripture and Religious Instruction.	Registers finally closed.	Singing from Notes. Time Tests, &c.	Grammar	Geography	Arithmetic	Assemble.	Registers called and finally closed.	Prac. Chem.	Theo. Chem.	Exercise
	2				Arithmetic	Grammar	Algebra			Mensuration	Reading	Exercise
	3				Algebra	Composition	Grammar			Arithmetic	Reading	Exercise
	4				Algebra	Geography	Arithmetic			Reading	Composition	Exercise
	5				Arithmetic	Grammar	Algebra			Mensuration	Reading	Exercise
	6				Algebra	Composition	Grammar			Arithmetic	Reading	Exercise
	7				Composition	Geography	Arithmetic			Reading	Writing	Exercise
	8				Arithmetic	Writing	Geography			Reading	Writing	Exercise
THURSDAY.	1	Scripture and Religious Instruction.	Registers finally closed.	Singing from Notes. Time Tests, &c.	Drawing	Drawing	Drawing	Assemble.	Registers called and finally closed.	Writing	Mensuration	Exercise
	2				Drawing	Drawing	Drawing			Arithmetic	Reading	Exercise
	3				Drawing	Drawing	Drawing			Mensuration	Reading	Exercise
	4				Drawing	Drawing	Drawing			Geography	Mensuration	Exercise
	5				Drawing	Drawing	Drawing			Arithmetic	Reading	Drill
	6				Drawing	Drawing	Drawing			Composition	Reading	Drill
	7				Drawing	Drawing	Drawing			Arithmetic	Reading	Exercise
	8				Drawing	Drawing	Drawing			Reading	Composition	Exercise
FRIDAY.	1	Scripture and Religious Instruction.	Registers finally closed.	Singing from Notes. Time Tests, &c.	Grammar	Algebra	Arithmetic	Assemble.	Registers called and finally closed.	Geography	Reading	Exercise
	2				Arithmetic	Grammar	Reading			Geography	Writing	Exercise
	3				Arithmetic	Grammar	Reading			Geography	Writing	Exercise
	4				Geography	Arithmetic	Grammar			Arithmetic	Writing	Exercise
	5				Arithmetic	Grammar	Reading			Geography	Writing	Exercise
	6				Arithmetic	Grammar	Reading			Geography	Writing	Exercise
	7				Geography	Grammar	Arithmetic			Reading	Composition	Drill
	8				Grammar	Geography	Arithmetic			Writing	Reading	Drill

CENTRAL ORGANISED SCIENCE SCHOOL, MANCHESTER.

SECOND YEAR'S COURSE.

CLASS A

Day.	Morning.			Afternoon.			Schedule of Subjects and Hours.			
Mon ..	Scrip.	French	Mathematics	P. P. & S. Geo.	Mach. Draw.		Mathematics	5¼	Sound, &c., or Magnet.	1½
Tues ..	Scrip.	Composition	Mathematics	Sound	French		Prac. & Theo. Chem...	4	French	2¾
Wed ..	Scrip.	Prac. Chem.	Theo. Chem.	Drawing	Drawing		Mach. Draw. & Geo. ..	2½	Freehand Drawing ..	2½
Thur..	Scrip.	Mathematics	Mechanics	Commercial	Commercial		Commercial Work	2½	Composition..........	1
Fri. ..	Scrip.	Mathematics	Theo. Chem.	Physiology	French		Theoretical Mechanics	1¼	Science Preparation ..	0
							Physiology	1¼		
							Total	24½		

CLASS B

Day.	Morning.			Afternoon.			Schedule of Subjects and Hours.			
Mon...	Scrip.	Prac. Chem.	Sound	French	Mathematics	Science Prepara.	Mathematics	4½	Physiology	1
Tues ..	Scrip.	Mathematics	French	P. P. & S. Geo.	Mach. Draw.		Theo. & Prac. Chem...	4	Sound, &c., or Magnet.	1¼
Wed ..	Scrip.	Physiology	Theo. Chem.	Drawing	Drawing		Mach. Draw. & Geo. ..	2½	French	3
Thur..	Scrip.	Commercial	Commercial	Mathematics	French	Science Prepara.	Freehand Drawing ..	2½	Composition..........	¾
Fri. ..	Scrip.	Mechanics	Theo. Chem.	Mathematics	Composition	Science Prepara.	Commercial Work	2¼	Science Preparation ..	1½
							Theoretical Mechanics	1¼		
							Total	24½		

CLASS C

Day.	Morning.			Afternoon.			Schedule of Subjects and Hours.			
Mon...	Scrip.	Mathematics	Sound	Drawing	Drawing		Mathematics	5	physiology	1¼
Tues ..	Scrip.	Mathematics	Composition	Theo. Mech.	French	Science Prepara.	Theo. & Prac. Chem ..	2¾	Sound, &c., or Magnet.	1¼
Wed ..	Scrip.	P. P. & S. Geo.	Mach. Draw.	Commercial	Commercial		Mach. Draw. & Geo. ..	2½	French	3
Thur..	Scrip.	Prac. Chem.	Theo. Chem.	Mathematics	French	Science Prepara.	Freehand Drawing ..	2½	Composition..........	1
Fri ..	Scrip.	Mathematics	Physiology	Mathematics	French	Science Prepara.	Commercial Work	2½	Science Preparation ..	1½
							Theoretical Mechanics	1¼		
							Total	24½		

Note.—Mathematics includes Algebra, Arithmetic, and Euclid for Stage I.; also for Stage II. includes Trigonometry. Commercial Work includes Book-keeping, Tots, Commercial Arithmetic, Précis Writing, and Shorthand.

All organised Science School time-tables must be submitted to the Science and Art Department on Form 122, and should show all the work of the School. Where, as in the case of large Schools, the classes of students of the same year are taught in sections, the work of each section must be shown in detail.

The course of instruction as laid down in the Science and Art Directory must, as a rule, be carefully observed. When it is desired to make any variation from such course the time-table should be accompanied by a letter giving the reasons for such variation.

In day Schools not less than three (3) hours daily, 5 days in the week, must in all cases be given to Science and Art instruction in each division of the School. Each lesson must be not less than 1 hour, and in Practical Chemistry not less than 1½ hours, in duration.

CENTRAL ORGANISED SCIENCE SCHOOL, MANCHESTER.

FIRST YEAR'S COURSE.

CLASS D

Day.	Morning.			Afternoon.			Schedule of Subjects and Hours.			
Mon...	Scrip.	Mathematics	French	Drawing	Drawing		Mathematics	6	Sound, &c., or Magnet.	1¼
Tues. .	Scrip.	Prac. Chem.	Magnetism	French	Mathematics	Science Prepara.	Theo. & Prac. Chem...	2¾	French	3½
Wed ..	Scrip.	Mathematics	French	Composition	Mathematics	Science Prepara.	Mach. Draw. & Geo. ..	2½	Composition..........	1
Thur ..	Scrip.	Mathematics	Theo. Chem.	P. P. & S. Geo.	Mach. Draw.		Freehand Drawing ..	2½	Science Preparation ..	2¼
Fri. ..	Scrip.	Composition	Mathematics	Commercial	Commercial		Commercial Work ...	2½		
								Total 24¼		

CLASS E

Day.	Morning.			Afternoon.			Schedule of Subjects and Hours.			
Mon ..	Scrip.	P. P. & S. Geo.	Mach. Draw.	Mathematics	French	Science Prepara.	Mathematics	6	Sound, &c., or Magnet.	1¼
Tues ..	Scrip.	French	Magnetism	Mathematics	Composition	Science Prepara.	Theo. & Prac. Chem...	2½	French	4
Wed ..	Scrip.	Mathematics	French	Mathematics	Science Prep.		Mach. Draw. & Geo. ..	2¼	Composition..........	1
Thur..	Scrip.	French	Mathematics	Prac. Chem.	Theo. Chem.		Freehand Drawing....	2½	Science Preparation ..	2¾
Fri. ..	Scrip.	Commercial	Mach. Draw.	Drawing	Drawing		Commercial Work	2¼		
								Total 24½		

CLASS F

Day.	Morning.			Afternoon.			Schedule of Subjects and Hours.			
Mon...	Scrip.	French	Mathematics	Prac. Chem.	Magnetism		Mathematics	6	Sound, &c., or Magnet.	1
Tues .	Scrip.	Mathematics	French	Mathematics	Science Prep.		Theo. & Prac. Chem...	2½	French	4¼
Wed ..	Scrip.	Commercial	Commercial	Mathematics	French	Science Prepara.	Mach. Draw. & Geo. ..	2¼	Composition..........	1
Thur..	Scrip.	Composition	Mathematics	French	Theo. Chem.		Freehand	2½	Science Preparation ..	2¾
Fri. ..	Scrip.	P. P. & S. Geo	Mach. Draw.	Drawing	Drawing		Commercial Work	2¼		
								Total 24½		

CLASS G

Day.	Morning.			Afternoon.			Schedule of Subjects and Hours.			
Mon...	Scrip.	Mathematics	French	Composition	Physiog.		Mathematics	5	Sound, &c., or Magnet.	0
Tues ..	Scrip.	Commercial	Commercial	Drawing	Drawing		Theo. & Prac. Chem ..	2¾	French	4
Wed ..	Scrip.	French	Mathematics	Science Prep.	Theo. Chem.		Mach. Draw. & Geo. ..	2½	Composition..........	1
Thur..	Scrip.	Physiog.	French	Mathematics	French	Science Prepara.	Freehand	2½	Science Preparation ..	2¼
Fri. ..	Scrip.	Prac. Chem.	Mathematics	P. P. & S. Geo.	Mach. Draw.		Commercial Work	2¼	Physiography	2¼
								Total 24½		

CLASS H

Day.	Morning.			Afternoon.			Schedule of Subjects and Hours.			
Mon...	Scrip.	Commercial	Commercial	Mathematics	French	Science Prepara.	Mathematics	5	Physiography	2½
Tues ..	Scrip.	P. P. & S. Geo.	Mach. Draw.	Drawing	Drawing		Prac. & Theo. Chem...	2½	French	4
Wed ..	Scrip.	Mathematics	French	Prac. Chem.	Theo. Chem.		Mach. Draw. & Geo. ..	2¼	Composition..........	1
Thur..	Scrip.	French	Physiog.	Mathematics	Science Prep.		Freehand	2½	Science Preparation ..	2½
Fri. ..	Scrip.	Physiog.	Composition	Mathematics	French	Science Prepara.	Commercial Work	2¼		
								Total 24½		

Note.—Mathematics includes Algebra, Arithmetic, and Euclid for Stage I.; also for Stage II. includes Trigonometry. Commercial Work includes Book-keeping, Tots, Commercial Arithmetic, Précis Writing, and Shorthand.

Scholarships and Prizes.—There should be, in connection with any scheme for Higher Grade Schools, a system of scholarships, to enable boys and girls of exceptional ability to remain at school beyond the ordinary age when instruction finishes in a Primary School. The best kind of scholarship I am acquainted with is the Science and Art Scholarship, established by the Science and Art Department. In connection with any school under Government inspection the Science and Art Department will allow, for every 200 scholars in ordinary attendance, four scholarships of the annual value—first year of £9, second year of £12, and third year of £15; and these scholarships may be all centred at one school. Consequently it follows that a School Board having under their control schools at which the united average attendance is 2,000 may have forty such scholarships, and provided there is a Higher Grade School they may be held there. For every scholarship allotted the annual sum must be made up of *bonâ fide* subscriptions from living persons. The rates cannot be used for the purpose, but money required for the local contribution to the scholarship may be raised by means of a concert, provided it is stated that the object of the concert is to raise money for the scholarship. The best way to do this is to print the announcement in the programme of the concert. All the Higher Grade Schools in Manchester raise money in this way, the occasion of the concert being the annual distribution of prizes. The annual concert of our Central School is held in the Manchester Free Trade Hall. It attracts an audience of 6,000 persons, and the net proceeds of the concert mean an addition to the Scholarship Fund of about £120 each year, after the defrayal of all expenses of room, printing, &c. We have, in addition, a number of annual subscribers, and for many years past we have secured annually fifty scholarships.

The following are the Regulations of the Science and Art

Department relating to these scholarships (Sections XLIV. and XLV. of Science and Art Directory):—

SCIENCE AND ART SCHOLARSHIPS.

These scholarships are for competition among the pupils of an Elementary School or Schools, or of an organised Day Science School. The object of the scholarship is to enable the committee of the local fund to maintain the successful competitor while pursuing his studies for one, two, or three years, at a Day School approved by the Department where more advanced instruction is given than in an ordinary Elementary School.

The term Elementary School includes any school, or department of a school, at which elementary education is the principal part of the education there given; but does not include any school, or department of a school, at which the ordinary payments in respect of the instruction, from each scholar, exceed ninepence a week, or which is conducted for private profit.

The managers of the local fund must contribute £5 each year, and lodge that sum annually with the Department before the 5th of April. For the first year of tenure of the Scholarship the local contribution will be supplemented by the Department with a grant of £4; for the second year with a grant of £7; and for the third year with a grant of £10. But it will rest with the locality to decide whether the scholarship shall be tenable for one, two, or three years.

CONDITIONS.

(*a*) With any number of students up to 100 on the register of the school, or group of schools, there can be but two such scholarships; above 100 and up to 150, three; above 150 and up to 200, four scholarships, and so on.

(*b*) The scholarship or scholarships must be awarded in a *bonâ fide* competition to the most successful student or students in some examination of the school. The absolute terms of the competition and the award of the scholarship will be left to the managers of the school, subject to the approval of the Department of Science and Art.

(*c*) The scholar must at the time of first appointment be under sixteen years of age on the 1st May in the year in which his appointment to a scholarship is made.

(*d*) The teacher, pupil teacher, or other paid servant of a school is not eligible.

(*e*) The scholar must continue to attend a Day School regularly, and—

(*f*) At the close of the first year pass in one or more subjects of Science, or of 2nd grade Art, improving upon any previous success; but the holder of a Science and Art scholarship will not be required to reach the standard for a pass in the Elementary Stage of a subject of Science, the requirements of this section being satisfied if a success in the Elementary Stage of the old system of payments would have been obtained.

(*g*) At the end of the second year obtain a higher class in the subject of Science in which he has already passed, or pass in some other subject of Science; or in another subject of Art, 2nd or 3rd grade; and

(*h*) At the end of the third year, pass in the advanced stage of a subject of Science in which he has not already passed in that stage, or in another subject of Art, 2nd or 3rd grade.

Application for the scholarship must be made on Form No. 280, before the 5th April. The examination on which it is awarded must be held, and the Form No. 281 submitting the name of the successful competitor must be sent in, before the 1st August. One moiety of the local contribution will be paid to the parent or guardian of the scholar by the Department on the 1st September, on the receipt of a certificate (Form No. 1066) from the managers that he is going on satisfactorily. The other moiety will be paid in the same way on the 1st February. The Department's grant becomes due after the results of the May examination in the subsequent year have been issued, and when the conditions of the scholarship have been fulfilled. Application for its payment must be made on Form No. 282.

Should it be desired to continue the scholarship for a second or third year, application must be made on Form No. 473. This form must be sent in as soon as the results of the scholar's examination, held at the close of his first or second year, are made known.

These scholarships lead up to the Royal and National scholarships, of £50 or £60 per annum, offered each year by the Science and Art Department (see page 212), and also may be preparatory for the Whitworth Exhibitions and Whitworth Scholarships (see page 213).

I could give many instances of old pupils at our Higher

Grade Schools who, by means of these scholarships, have been enabled to climb the educational ladder successfully.

We have benefited in Manchester by certain local benefactions for scholarships—such as the Lancasterian School Scholarships—the endowment of which was derived from the sale of a Lancasterian school. The proceeds were handed over to the Board, and a portion of the income is devoted by the Board for the establishment of scholarships. The following are the particulars of these scholarships:—

THE LANCASTERIAN SCHOLARSHIPS, EXHIBITIONS, AND PRIZES.

(Interest on an Endowment of about £6,300.)

The annual income of the fund shall, after deducting the cost of examination and other expenses of administration, be devoted, or applied, as follows:—

(*a*) As to two-sixths parts thereof: To the maintenance of scholarships of £10 per annum, tenable for three years, for such boys, being Foundation Scholars at the Manchester Grammar School, as have come from Public Elementary Schools within the district, for the time being, of the Board.

(*b*) As to one-sixth part thereof: To the maintenance of scholarships of the yearly value of £10, tenable for three years, for girls at, or entering at the Manchester High School for Girls who have come from Public Elementary Schools within the district, for the time being, of the Board.

(*c*) As to one other sixth part thereof: To the maintenance of exhibitions of £5 per annum, tenable for a period not exceeding three years, for pupils, male or female, in any of the Higher Grade Schools of the Board who have come from Public Elementary Schools within the district, for the time being, of the Board.

(*d*) As to one other sixth part thereof: To the maintenance of exhibitions of £2 per annum, tenable for a period not exceeding three years, for pupils, male or female, in any of the Higher Grade Schools of the Board who have come from Public Elementary Schools, for the time being, of the Board.

(*e*) And as to the remaining one-sixth part thereof: To the establishment of prizes to be awarded, at the discretion of the Board, to pupils, male or female, for the time being attending Public Elementary Schools within the district, for the time being, of the Board.

The possession by a district of a Higher Grade School will frequently lead to similar scholarships being arranged for.

For the pupils in standards the ordinary prizes of the Public Elementary School will be sufficient, and of these it is not necessary to say anything here.

Examinations.—There will be (*a*) the ordinary annual examination of the children in the standards by H.M. Inspector, as in the case of any other Public Elementary School. (*b*) The annual examinations of the Science and Art Department, for which the pupils of the several schools will be prepared. (*c*) The annual examination in drawing of the children in the standards by a local inspector of the Science and Art Department, who will also probably examine the manual instruction in connection with the organised science school.

In addition, the advanced pupils may well be encouraged to prepare for any local examinations in commercial subjects, and for the annual examinations of the Society of Arts.

Advantage should also be taken of any local scholarships at higher places of instruction, and pupils accordingly prepared for such scholarships. Successes at such examinations very much add to the character of the school.

Hints on General Management.—I have dealt so fully with the various phases of Higher Grade School work in the preceding sections of this chapter, that I have comparatively little to say which falls particularly under the heading of management. As I have already attempted to show, the school should be conducted to meet the practical requirements of those for whose benefit it is carried on. Many of the best features of our great public schools may be copied with advantage—in the nature of encouraging clubs for outdoor games, such as cricket and football for the boys. In the section dealing with plans of Higher Grade Schools I have advocated the provision of a gymnasium. Under the direction of an instructor there is a distinct advantage to be gained by the girls having their own regular instruction in physical exercises in the use of such apparatus as will be found in general use in a gymnasium. This instruction should, however, be given on some fixed system, such as the Swedish drill and use of gymnastic appliances, advocated in Ling's books on the subject.

The school buildings, whilst needing no expensive external architectural features, should be well arranged on the class-room principle, and provided with adequate playgrounds. If cricket and football are taken up, it will probably be necessary to rent ground for that purpose, which, however, need not be in the immediate proximity of the school. All proper appliances for the Science Instruction, with books, apparatus, and stationery will, of course, be provided, and I think it is preferable that the pupils should be charged for the use of their school materials rather than that they should be expected to purchase. A charge of 1d. per week will be found sufficient to cover the cost of books, &c., required in a Higher Grade School.

A good prospectus of the school should be issued annually, and the successes of the pupils, past and present, be recorded therein. It will be found desirable that the school year should be arranged to end with the 31st of May, otherwise the arrangements of the Organised Science School will be out of gear.

When the Higher Grade School is limited to the upper standards, it will be necessary for the master to examine pupils coming from other than Public Elementary Schools, in order to test their ability to take up the work of the Higher Grade School.

I do not think that it is a good plan to prescribe in any way the time when pupils will be admitted to the Higher Grade School. I know this is done by some school authorities, but it has very serious disadvantages. I would allow admissions to go on all through the year, as long, of course, as there is room in the school. In dealing with children past Standard VII., it must of necessity follow that during the year a considerable number still leave the school, and if new admissions are only taken at the commencement of the school year, the numbers at the end of the year will be very seriously diminished.

Teachers.—As I have already stated, I think that the school, however organised, should be under the control of a head master. The school must be completely staffed with adult teachers. As far as possible the assistants should possess additional qualifications to those generally held by teachers of Public Elementary Schools, such as science and art and other certificates. The instruction in modern languages should be a distinct feature of the higher classes of the school, and, if possible, I think that such instruction is best given by Englishmen with the necessary knowledge.

In large Organised Science Schools, it will be desirable to have a master who shall direct the science instruction.

The work of properly controlling a thoroughly efficient Higher Grade School is one requiring no mean ability on the part of the head master, and when so much of the success of the school depends upon the man who fills the position, it follows that extreme care must be exercised in selecting a suitable teacher for the position, which must be supported by adequate remuneration, and the entire confidence of the authority controlling the school.

The head master should each week hold, out of school hours, a conference with his staff of teachers, when he will have an opportunity of discovering difficulties, and giving valuable hints to the assistant teachers. This has been for years the practice of Mr. James Scotson, of the Manchester Central Schools, whose success as a head master of a Higher Grade School is too well known for any words of mine to be needed to commend his work.

School Fees.—The fee charged is a question upon which the locality will decide. In Manchester we charge 6d. per week as a rule, and this is the fee of the Organised Science School. 1d. per week is charged for the use of books. It has been maintained that to charge a high fee (for a Public Elementary School) in the case of the Higher Grade Schools is to prevent the working classes having the advantage of the schools for their children. In Manchester we have a rule that when a child has passed Standard VI. in an ordinary Public Elementary School, he may be admitted free to the Organised Science Departments of the Higher Grade Schools, and the rule works well, there being comparatively few schools where anything like proper provision is made for Standard VI., which is the standard for full time exemption in Manchester.

Grants.—The following are the figures of grants actually earned in a Higher Grade Board School:—

Grant { Education Department ....£1 5s. per head.
Science and Art Department...£3 5s. ,,

The average grant (Education Department) is reckoned over the whole school (Standard V. to Standard VII.), the number presented in Science and Art being about 450.

Balance Sheets.—The following are balance sheets of Higher Grade Schools, and I have added particulars showing the numbers in each school:—

BALANCE SHEET—MANCHESTER CENTRAL HIGHER GRADE BOARD SCHOOL.

Account of the Income and Expenditure of the Central Board School, for the year ended 31st May, 1891, showing the amounts actually received and actually disbursed during the year.

INCOME.	£	s.	d.	Total. £	s.	d.
To Grant from Committee of Council on Education				806	2	10
,, Rates				188	4	9
,, School Fees paid by Scholars				2078	18	11
,, Amount received for Books and other Articles Sold to Children				420	11	2
,, Income arising from other sources, viz.:—						
From Department of Science and Art	1555	1	5			
Water	—					
Fuel and Light	80	0	0			
Waste Paper	2	14	0			
Rent	0	19	0			
Cookery Dishes Sold	8	18	1			
Use of Dining-room	24	4	9			
				1671	17	3
Total				£5165	14	11

EXPENDITURE.	£	s.	d.	Total. £	s.	d.
By Salaries of Teachers				3793	16	2
,, Books, Apparatus, and Stationery				423	19	1
,, Fuel, Light, and Cleaning				457	10	1
,, Replacement of Furniture and Repairs to Building and Furniture				284	9	4
,, Rents, Rates, Taxes, and Insurance				51	5	1
,, Other expenses, viz.:—						
On account of Prizes	58	2	10			
Medical Fees	0	2	6			
Pupil Teachers' Fees at Science and Art Classes	—					
Pupil Teachers' Fees at Singing Classes	—					
Cookery Materials	13	14	10			
Portion of Organising Masters' Salaries, &c.	28	13	2			
Examination Papers (Science and Art)	48	1	10			
Grants to Pupil Teachers	6	0	0			
				154	15	2
Total				£5165	14	11

Average Attendance of Public Elementary School	640
Average Attendance of Organised Science School	473
Total	1113
Accommodation of Chemical Laboratory	80

BALANCE SHEET—MANCHESTER ST. MATTHEW'S HIGHER GRADE BOARD SCHOOL.

Account of the Income and Expenditure of St. Matthew's (Ardwick) Board School, for the year ended 30th June, 1891, showing the amounts actually received and actually disbursed during the year.

INCOME.	£	s.	d.	Total. £	s.	d.
To Grant from Committee of Council on Education				685	11	0
,, Rates				—		
,, School Fees paid by Scholars				1159	19	4
,, Amount received for Books and other Articles Sold to Children				164	0	3
,, Income arising from other sources, viz.:—						
From Department of Science and Art	101	18	0			
Water	0	9	3			
Fuel and Light	40	0	0			
Waste Paper	1	11	3			
Rent		—				
Cookery Dishes Sold	2	3	11			
				146	2	5
Total				£2155	13	0

EXPENDITURE.	£	s.	d.	Total. £	s.	d.
By Salaries of Teachers				1457	16	8
,, Books, Apparatus, and Stationery				263	14	1
,, Fuel, Light, and Cleaning				155	12	2
,, Replacement of Furniture and Repairs to Building and Furniture				101	8	6
,, Rent, Rates, Taxes, and Insurance				72	6	5
,, Other expenditure, viz.:—						
On account of Prizes	23	10	7			
Medical Fees	0	5	0			
Pupil Teachers' Fees at Science and Art Classes		—				
Pupil Teachers' Fees at Singing Classes		—				
Cookery Materials	5	7	0			
Portion of Organising Masters' Salaries, &c.	28	16	3			
Instruction of Pupil Teachers	19	10	3			
Examination Papers (Science and Art)	1	5	3			
				78	14	4
,, Balance				26	0	10
Total				£2155	13	0

Average Attendance of Public Elementary School	643
Average Attendance of Organised Science School	29
Total	672
Accommodation of Chemical Laboratory	10

BALANCE SHEET—MANCHESTER DUCIE AVENUE HIGHER GRADE BOARD SCHOOL.

Account of the Income and Expenditure of Ducie Avenue Board School, for the year ended 31st May, 1891, showing the amounts actually received and actually disbursed during the year.

INCOME.	£	s.	d.	Total. £	s.	d.
To Grant from Committee of Council on Education				1057	0	4
„ Rates					—	
„ School Fees paid by Scholars				1878	19	3
„ Amount received for Books and other Articles Sold to Children				325	2	6
„ Income arising from other sources, viz.:—						
From Department of Science and Art	303	2	0			
Water		—				
Fuel and Light	40	0	0			
Waste Paper	2	11	3			
Rent		—				
Cookery Dishes Sold	4	9	1			
Salary Repaid	0	10	10			
				350	13	2
Total				£3611	15	3

EXPENDITURE.	£	s.	d.	Total. £	s.	d.
By Salaries of Teachers				2389	11	1
„ Books, Apparatus, and Stationery				310	9	7
„ Fuel, Light, and Cleaning				234	12	1
„ Replacement of Furniture and Repairs to Building and Furniture				118	0	9
„ Rent, Rates, Taxes, and Insurance				126	14	7
„ Other expenses, viz.:—						
On account of Prizes	47	19	11			
Medical Fees	0	12	6			
Pupil Teachers' Fees at Science and Art Classes		—				
Pupil Teachers' Fees at Singing Classes		—				
Cookery Materials	7	10	0			
Portion of Organising Masters' Salaries, &c.	65	11	5			
Grant to Pupil Teacher	1	0	0			
Police Services		—				
School Fees Repaid	1	18	9			
Examination Papers (Science and Art)	7	17	2			
				132	9	9
By Balance				299	17	5
Total				£3611	15	3

Average Attendance of Public Elementary School	1081
Average Attendance of Organised Science School	79
Total	1160
Accommodation of Chemical Laboratory	36

In the foregoing there is sufficient variety of school to fully illustrate the question of cost. In the case of St. Matthew's School (2) the Organised Science School has been very much hampered through being held in temporary premises, with a chemical laboratory only accommodating ten students at one time.

Plans of Higher Grade School.—In the sketch plans and sections which will be found on pp. 185-188, I have sketched an economically arranged Higher Grade School, the cost of which need not much exceed the limit of cost of any ordinary Public Elementary School. My aim has been to provide a school comprising all the needful accommodation arranged with the strictest economy. The architectural treatment of the elevation I have not ventured to give. Some of my arrangements are, I believe, novel. For instance, I place the chemical laboratory and cloakroom on the basement floor, and all the advantages of a central hall are secured by the gymnasium, also placed in the basement.

The school is designed for children in the standards (no provision being made for infants), and is arranged in separate floors for boys and girls. With some modification the plans could be made to suit a mixed school, and if too large can easily be reduced.

In the basement will be found accommodation for gymnasium (or assembly hall) (for both boys and girls*), chemical laboratory, lecture theatre, manual instruction room (boys), with rooms for cookery and laundry work (girls). The basement has a clear height of 15ft., rising 8ft. above street level, and the windows should be from ceiling to within 3ft. of floor. An outside area surrounds the building on three sides. A staircase is placed at the end of the corridor near to the chemical laboratory, in order to render easy access to the main floor of the school.

---

* The gymnasium serving for all purposes when it is necessary to assemble the whole school for religious services, singing lessons, &c. The floor should have permanent lines, 24 inches apart, marked across whole width. These lines being used for the pupils to stand to.

On the ground floor there is accommodation for 545 boys, and, in addition, two lecture theatres. The whole of the class-rooms are separated by movable partitions, and nearly the entire floor can be made practically into one room for examination purposes. I have placed the head master's room in a central position, and commanding a full view of the whole floor.

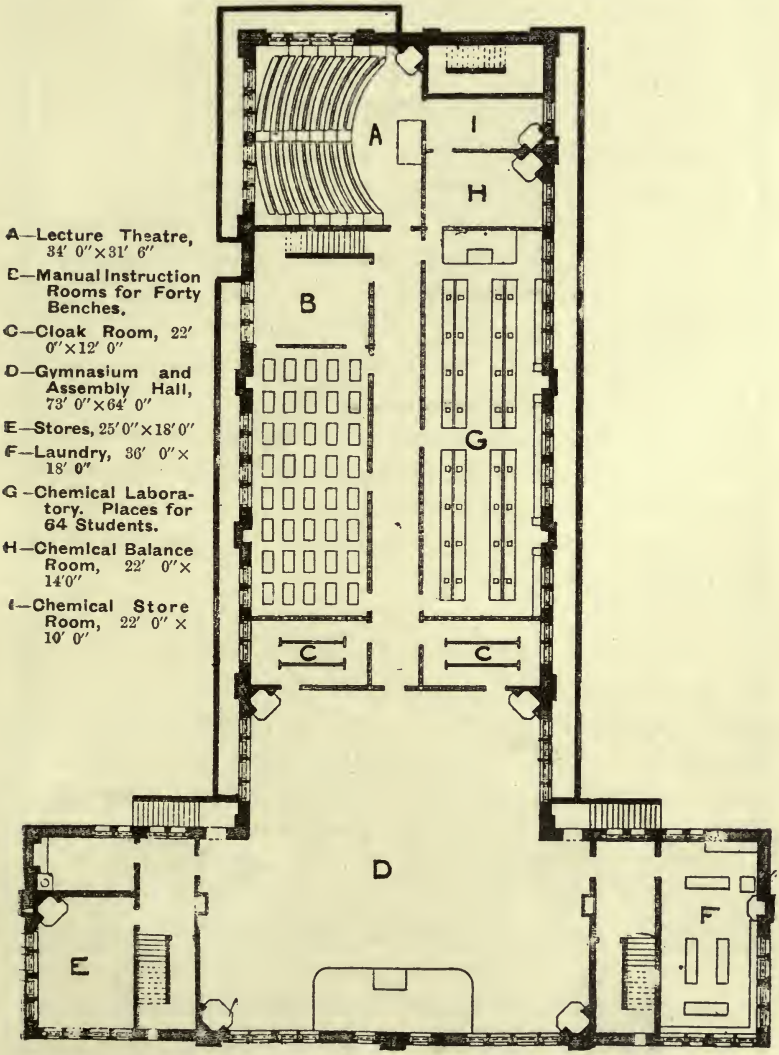
On the first floor there is class-room accommodation for 366 girls, arranged in the same way as the boys' school. Attention is drawn to the wide corridors (12ft.), and it is suggested that examples of pupils' work should be hung along the sides of these spacious passages. On this floor I have placed a large drawing-room, with north light, and also a room for cookery.

Including the extra accommodation of chemical laboratory, lecture theatres, and rooms for drawing and cookery, such a school will afford ample accommodation for 1,500 pupils, inclusive of 300 in the Organised Science School. The offices are put well back from the school, and on each side there is a spacious playground, the contents of the whole site being 4,000 square yards.

Generally it should be noticed that the pupils enter the school from the yards, and that I have placed the entrances at the sides. Fire-places are used throughout the schools, but, if preferred, pipes may be used for heating purposes. I strongly adhere, however, to the opinion that open fire-places and sash-windows are best suited for school buildings.

The walls of all school playgrounds should be lined on inside with salt-glazed bricks, and the pavement should be of the kind known as a "granolithic," properly laid out with fall to grids, and arranged with "man-holes" for easy access to drains. White glazed bricks are strongly recommended for the basement and the inside of the offices. The windows of the school should, as far as possible, be of clear glass throughout, and ground glass blackboards may be let into the partitions of classrooms in the proper positions.

In some localities, where the children live long distances from the Higher Grade Schools, it will be necessary to add a dining-room, and kitchen for warming dinners, &c. This provision can easily be made in the basement of the building.



A—Lecture Theatre, 34′ 0″×31′ 6″

B—Manual Instruction Rooms for Forty Benches.

C—Cloak Room, 22′ 0″×12′ 0″

D—Gymnasium and Assembly Hall, 73′ 0″×64′ 0″

E—Stores, 25′0″×18′0″

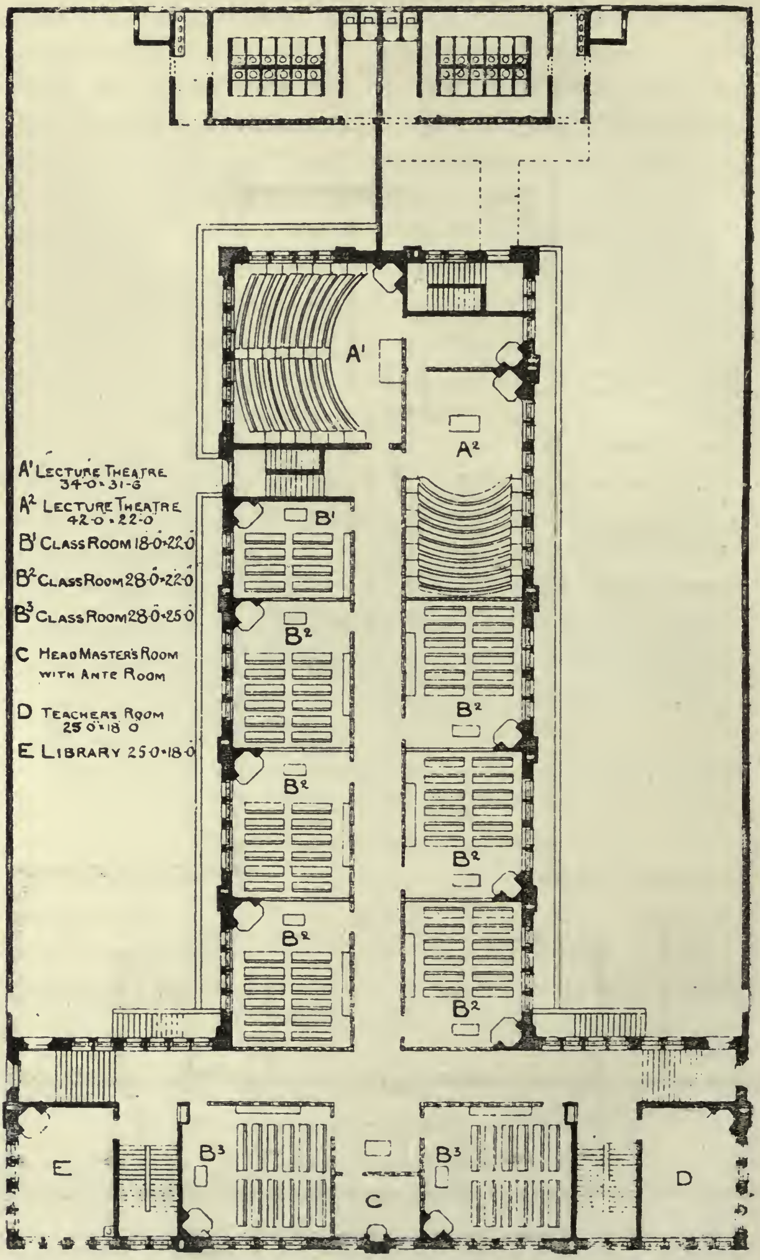
F—Laundry, 36′ 0″× 18′ 0″

G—Chemical Laboratory. Places for 64 Students.

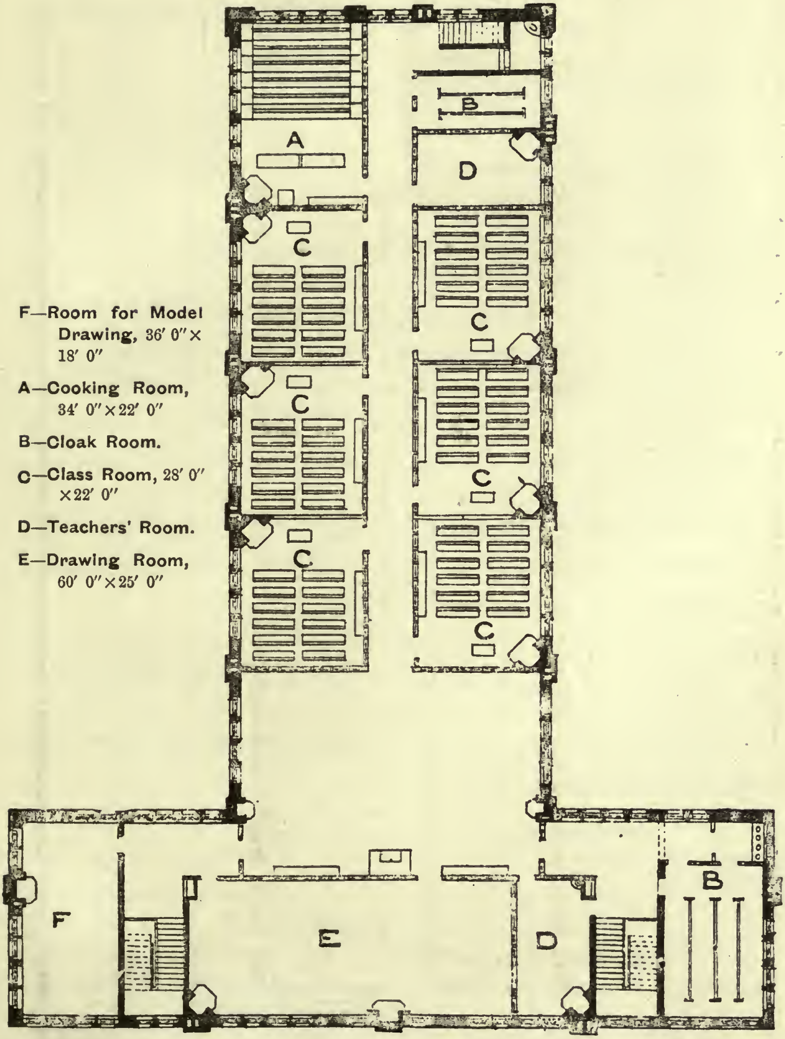
H—Chemical Balance Room, 22′ 0″× 14′0″

I—Chemical Store Room, 22′ 0″ × 10′ 0″

HIGHER GRADE SCHOOL—BASEMENT PLAN.


A¹
A²
A¹ Lecture Theatre 34-0 × 31-6
A² Lecture Theatre 42-0 × 22-0
B¹ Class Room 18-0 × 22-0
B² Class Room 28-0 × 22-0
B³ Class Room 28-0 × 25-0
C Head Master's Room with Ante Room
D Teachers Room 25-0 × 18-0
E Library 25-0 × 18-0
B¹
B²
B²
B²
B²
B²
B²
E
B³
C
B³
D

HIGHER GRADE SCHOOL—GROUND FLOOR PLAN.



F—Room for Model Drawing, 36′ 0″ × 18′ 0″

A—Cooking Room, 34′ 0″ × 22′ 0″

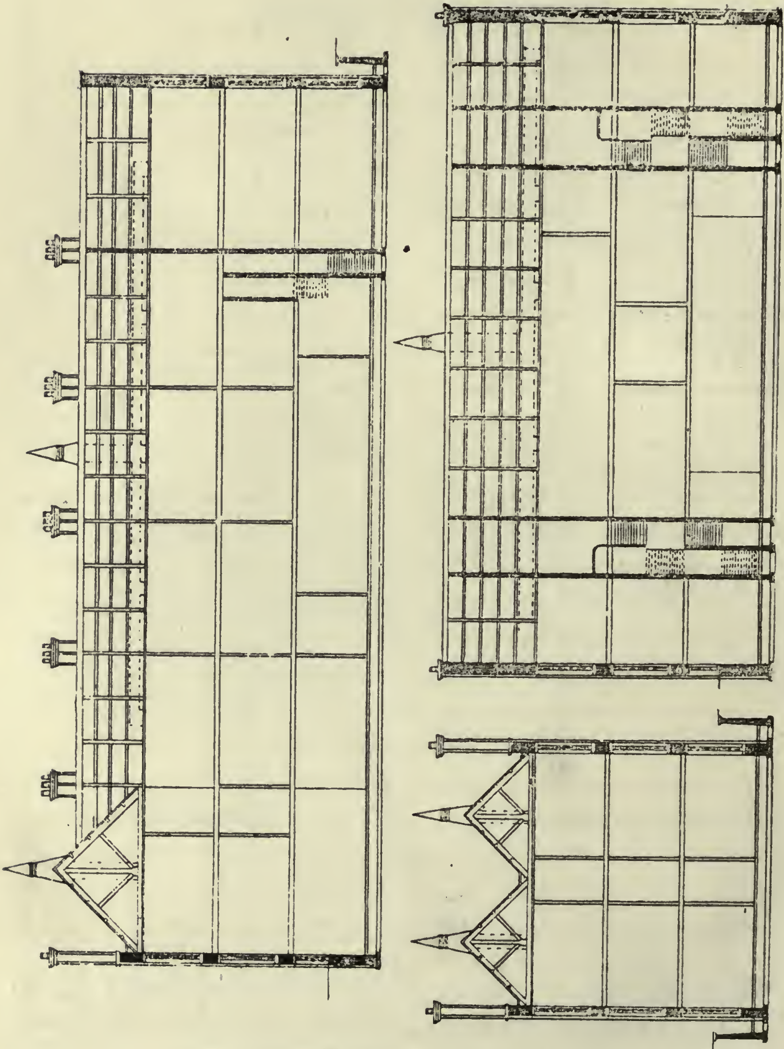
B—Cloak Room.

C—Class Room, 28′ 0″ × 22′ 0″

D—Teachers' Room.

E—Drawing Room, 60′ 0″ × 25′ 0″

Higher Grade School—First Floor Plan.



Higher Grade School.—Sections.

CHAPTER IX.

TECHNICAL INSTRUCTION (ADVANCED).

In the preceding chapters I have attempted to set forth, with more or less of continuity, schemes of various kinds of Continuation Schools, leading up to the schools of advanced technical instruction, which will deal more particularly with the application of Science and Art to trades and manufactures. It will largely depend upon the efficiency of these Continuation and Higher Grade Schools, in their preparatory work of technical instruction, whether the institutions for advanced instruction will be able fully to accomplish their ends. The work of establishing or carrying on existing Technical Schools will mainly fall to the lot of County Councils for the administrative parts of the counties and of the town councils of county boroughs.

The leading features of the schemes of instruction of these Higher Technical Schools must largely depend upon the trades and occupations of the district which such schools are planned to supply. A good example of one of these schools is to be found in the Sheffield Technical School, where machine construction and drawing and all the processes of steel manufacture are practically dealt with. In districts where the main industries are the manufacture of cotton or woollen fabrics, the Technical Schools must deal with all the processes by which cotton or wool are treated until they reach the finished article, ready for the market. The teaching of the science of agriculture in all its branches must largely engage the attention of the authorities of rural districts, and will, no doubt, lead to an increased number of farms being carried on for experimental and practical instruction. It is unnecessary to touch upon the various kinds of industries of the United Kingdom, the elements of which will have to be included within the schemes of technical instruction for various localities. Not only should the local authority provide efficient instruction bearing upon the special trades of its locality, but if they are wise they will do what they can to promote the establishment of new trades and industries. The town or district which depends wholly upon one staple trade is manifestly more liable to reverses of fortune than one relying upon a variety of trades or manufactures. Instances of the disastrous consequences of a town being limited to one trade are not difficult to quote. A notable one is that of Macclesfield, and the reverses in the silk trade brought about by foreign competition. Another case is that of the part of Staffordshire known as the Black Country, where the fluctuations of prosperity, which are dependent upon the manufacture of iron, have very frequently been attended by disastrous consequences to the inhabitants of whole districts mainly dependent upon this one industry. An example of how a new industry may prove the salvation of a town is happily illustrated by the case of Coventry, which would have undoubtedly shared the fate of Macclesfield had it not been for the introduction of the manufacture of cycles. The town of Leeds is also another good example of how uniform prosperity may be maintained by a variety of trades. Leeds is the centre of the woollen trade, but has, in addition, large engineering works, boot and shoe manufactories, and factories for the production of clothing. The development of the industry of hat-making has been a valuable acquisition for the town of Stockport. These instances of towns whose fortune it has been to derive incalculable benefit from the introduction of new trades will be sufficient to illustrate the great importance of authorities, having the direction of technical instruction, putting forth strenuous efforts for the promotion of new industries, whilst striving at the same time to promote the development of those they may already possess.

The development of technical instruction in the country will be the growth of many years to come, but much of the success of the future of such instruction will depend upon the laying down, upon wise lines, of a comprehensive scheme of schools and classes. Such a scheme should generally embrace—

(*a*) The subsidising and development of existing institutions where science and art instruction is efficiently carried on.

(*b*) The establishment of a graded scheme of scholarships and exhibitions for the encouragement of deserving students, and their maintenance at schools or colleges for advanced instruction.

In connection with these scholarships it should be noted that the great need of the present time is the foundation of small bursaries in connection with Evening Continuation Schools and Higher Grade Schools, in order to encourage pupils of from twelve to sixteen years of age to pursue their studies. In connection with the Day Schools such bursaries should be of sufficient value not only to cover the cost of the advanced instruction, but also, either wholly or partially, to compensate the parents for the loss, during a few years, of the wage-earning power of the young people who may be fortunate enough to secure such exhibitions. These exhibitions should be renewed annually for a period of at least three years, and as it may be assumed the places of higher instruction where such exhibitions will be held will be Technical Schools or Higher Grade Schools, under the control of the local authority, the fees charged will be either nominal or wholly omitted in

LIBRARY OF THE UNIVERSITY

the case of such exhibitioners, it will probably be sufficient if the annual value of the exhibition ranges from £12 to £15. These exhibitions should be paid in quarterly instalments. In the case of bursaries for evening instruction, it is desirable that the number of such bursaries should be as large as possible, rather than that a number should be given of any considerable value; and where the fees charged are not of any appreciable moment, I think it would be sufficient, at all events in the experimental stage, that such bursaries should not be of a higher value than from £2 to £5 for the session, which will generally extend over about eight months (September to May). The amount of these Evening School bursaries should be paid in two moieties, one at Christmas and the other immediately after the examinations at the end of the session.

In the case of all exhibitions and bursaries the payments ought to depend upon the strict observance of rules as to conduct and application to study, and the parents or guardians of those holding the exhibitions should be required to sign an agreement undertaking that these conditions shall be carried out.

(*c*) The establishment of schools for technical instruction. In connection with this important part of the educational work of the local authorities it is not necessary to enter into detail. The subjects of instruction will be of an advanced character, and form the practical application of science and art instruction in connection with trades and manufactures. The work of the laboratories and the workshops should be of the best, and consequently it goes without saying that the teachers in all the departments must be men of proved ability in their various departments, combining therewith skill in imparting knowledge and zeal for the great work which they are engaged to promote. Over the whole school there should be a head master with a responsible control of the whole of the departments. The head master, whilst being a man of the highest education and possessing academic qualifications of no mean kind, should also be able to bring himself in touch with the needs of the students and the work of the various departments of the school. Whilst the head master need not be a proficient in all or any of the technical workshop instruction, he should, by means of general knowledge, be able wisely and efficiently to control the whole of such instruction. Any attempt to carry on such a school by means of the heads of the various teaching departments would be a very uncertain experiment, and liable to be productive of a want of continuity in the course of studies. The students of the Technical School will at first belong to a class, and be of an age, where wise guidance and complete control are of supreme importance. These two essentials can best be secured by placing the school under the direction of one who will occupy, as principal, a somewhat analogous position to that held by the high master of St. Paul's or one of our great public schools. There should also be in connection with the Technical School a secretary or registrar, whose duties will mainly consist in the administrative work of the institution, and upon whose assiduity and skill much of the success of the whole work will depend.

As I have already said, much of the ultimate success of technical instruction, and it may be the continuance of the large subsidies of public money now given from the national exchequer, will depend upon the wisdom and foresight of the local authorities to whom it has been committed, in drawing up practical schemes of what is really secondary education, in order that a proper return may be secured for the large expenditure of money which will be necessary, a return in the shape of a provision of sound practical technical instruction which has hitherto not been at the command of the rising generation of this country. It is said sometimes, in answer to mild criticism of the modes which some of the county authorities have adopted in administering their funds, that at first mistakes are inevitable, but that we shall after awhile, in our usual English fashion, blunder into a right way, and sound technical instruction—like almost every other good thing—will fall to the lot of the Briton. This is a spurious kind of philosophy, which I think should be scouted. I think it is of the highest importance that all County Councils and Local Authorities should very cautiously proceed in their work of developing technical instruction. For my part I have the greatest confidence in the authorities who are charged with the work. I have heard it said that County Councils and Town Councils are not elected for educational purposes, and are, therefore, wholly unsuited for the work that has been thrust upon them; and, consequently, it would be argued, I suppose, that the ideal authority for the discharge of such duties would be one composed of practical educationists. Experience of public work, however, does not bear out this theory. Even School Boards, now-a-days, are largely composed of those who have had little or no practical acquaintance with school teaching, and who are generally elected upon party lines. Yet it certainly cannot be said that such members are not equal to their work of controlling public elementary education. The fact is that no branch of public work is, on the whole, better managed; and nowhere is improvement more marked than in the great strides which primary education is making under the direction of such members toward what will ultimately be as perfect a system as can be shaped by human agency. From all this I make bold to argue that the public authorities, to whom has been given the charge of instruction, are quite competent to adequately discharge their important duty, provided they give a careful and an adequate amount of consideration to the subject.

I propose very briefly to refer to a few of the dangers I see in the way of local authorities who have the practical carrying out of the work, and first I would say that I think it will be a great mistake for any County or Town Council to commit themselves with undue haste to a lavish expenditure in bricks and mortar. To proceed to the erection of a large technical school, involving in its annual cost, when it is provided, a considerable slice of the amount of money available for technical instruction in the payment of interest, and repayment of principal, occasioned by the outlay of capital, will be, I think, except in the case of a few of the largest towns, a mistake. The probability is that when such a school is finished, and opens its doors for students, it will be found that such students are few in number and poor in quality, seeing that there has been no adequate provision made for cultivating a supply. Elementary work will have to be largely undertaken in order to get numbers, in premises which were not designed for such use, and teachers appointed for higher work will have the disheartening task of struggling with the deficiencies of ignorant pupils, who would have been very much more easily dealt with by means of a Preparatory Continuation Evening School, held in the premises of any Public Elementary School. By the time the projectors of such a school have obtained a nucleus of pupils suitable for higher instruction, it will probably be found that nothing would have been lost and something gained if the hurry to build an institution had not been so great.

Another danger, but one of quite a different kind, is the frittering away of money upon a large number of classes conducted in the premises of rival school authorities. Such classes I mean as those in elementary subjects now fully provided for in the New Code, and which would be more in their place as adjuncts of ordinary Elementary Evening Schools than they are as the main work of an authority charged with the provision of technical instruction. County Councils may find themselves in future years in an awkward predicament, by having, in their anxiety to please everybody, given driblets of money to numerous small classes scattered all over their district, and thus committed themselves to a very large expenditure of money, which may in the future be wanted for more advanced work. Experience will show that it is easier to make such grants than it will be to withdraw them. I quite agree with the importance of centering such instruction in our small towns and villages, and the imprudence of obliging young people living in suburban districts to attend evening classes in large towns. By all means let each parish or village have its own properly supported technical classes, but there should be no unnecessary multiplication of them, and they should be properly constituted centres for such instruction, if possible under some recognised public control, such as that of the local board of the district, when there is no school board, and the instruction should be properly co-ordinated with a scheme of instruction applicable to the whole of the county. I am aware that in many rural districts there are not local boards or school boards. In such a case the County Council might appoint from the local school committees a body of managers to supervise the instruction.

Once more I would emphasise what I have already alluded to, namely, let the most be made of existing agencies before starting new ones.

As in the case of classes or schools, so with regard to teachers and examinations. I think it will be a mistake to unnecessarily multiply either the one or the other. Of examinations I think we have almost sufficient; and I do not wish to see the County Councils giving certificates to teachers except in very exceptional cases. Let there be classes for teachers by all means, but let them be preparatory for examinations of the Education Department, the Science and Art Department, the City and Guilds of London Institute, the Society of Arts, the Union of Institutes, University Authorities, and recognised Schools of Cookery and Domestic Economy. Surely these cover all the ground, and if there is any particular department of work unprovided for, some of these existing authorities can supply the deficiency. The readiness to do this is illustrated by the recently established teachers certificates examinations in woodwork of the City and Guilds of London Institute.

City and Guilds of London Institute.—PROGRAMME OF EXAMINATIONS IN TECHNOLOGICAL SUBJECTS.—This is an examining body dealing with technological subjects. The following is the programme issued by the Institute :—

REGULATIONS.

1. The City and Guilds of London Institute for the Advancement of Technical Education will afford facilities for carrying out an examination in any of the subjects enumerated on page 11 (of their programme), wherever a sufficient number of candidates present themselves, provided a local committee undertakes to carry out the examination according to the rules laid down.*

2. The Technical Instruction Committee of any County or Borough Council, the Committee of any Art or Science School under the Science and Art Department, or any School Board, or any "Local Examination Board" connected with the Society of Arts,† will be accepted as a suitable committee for carrying on the Institute's examinations. In special cases, also, the Institute will arrange for the establishment of special local committees for the technological examinations.

3. The examination in most of the subjects will be in two grades: (1) Ordinary, (2) Honours. The ordinary examination is intended principally for apprentices and journeymen; the honours examina-

---

* As to number of candidates see Rule 11.

† A list of these boards can be obtained upon application to the Secretary of the Society of Arts, Adelphi, London, W.C.

tion for foremen, masters, managers, and teachers of technology; but candidates may enter themselves for either grade, except in certain subjects, hereinafter indicated, in which they are required to obtain a certificate in the ordinary grade before being examined for honours.

4. Candidates who pass in either grade will be arranged in two classes, a first and a second class, and certificates (first and second class) will be awarded to successful candidates in each grade.

5. Candidates who obtain a second-class certificate in either grade may be re-examined in any subsequent year for a first-class certificate in the same grade, but failing to obtain sufficient marks to entitle them to a first-class certificate, a second certificate will not be awarded to them. Candidates who have obtained a first-class certificate in the ordinary grade will not be re-examined in the same grade. No candidate may be re-examined in any subject in a lower grade than that in which he has already passed.

6. Prizes consisting of silver and bronze medals will be given in each subject, provided the merits of the candidates justify the examiners in recommending them; and money prizes are also offered on like conditions by several of the Livery Companies.

7. The certificates and prizes will be forwarded as soon after the examination as possible to the secretaries of the local committees.

8. The fee, payable to the Institute, for each examination paper asked for is one shilling. In certain subjects additional fees are charged as stated in the syllabus of those subjects. Intending candidates should apply to the secretary of the nearest local committee, or to the special local secretary, who will forward their applications, together with their fees, to the examination department of the Institute, Exhibition Road, London. It is only in the case of candidates failing to make arrangements with the local secretary that any application for examination can be considered by the Institute.

9. If, in any subject, no examination is held, owing to a sufficient number of candidates not having applied for examination (see Rule 11), the fee will be returned; and should a candidate fail to present himself after a paper has been applied for on his behalf,

a credit note for one-half of his fee will, except in certain cases, hereinafter indicated, be forwarded to the secretary at the centre at which the name of the candidate was entered. This credit note will be accepted in part payment of the fees of candidates from that centre at the next subsequent examination, but will have no value unless used for the purpose and at the time here stated. This regulation, as regards half the fees, does not apply to candidates who make application to be examined at the Central Institution in Exhibition Road, London, or at the Finsbury Technical College, nor to candidates for any examination in which is held a separate practical test.

10. All written examinations will be conducted by means of printed papers, and the answers must be written upon paper specially provided for the purpose. The question papers will be sent in sealed envelopes to the gentleman appointed by the Institute to receive them, on, or immediately before, the day of the examination, and the envelope containing these papers must be opened in the presence of the candidates at the time of the examination. A number will be allotted to each candidate, and he will be known to the examiner by that number, and not by name. The worked papers must be sealed up immediately on the termination of the examination, and despatched, without delay, prepaid, to the examinations department of the Institute, Exhibition Road, London, S.W.

11. The examination will include the following subjects, but no examination will be held in any subject unless at least ten candidates in the aggregate apply for examination. If, however, five candidates, who have received instruction in any registered class, apply to be examined in any one subject, an examination will be held in that subject. No candidate may be examined on the same day in more than one subject.

SUBJECTS OF EXAMINATION.

1. Salt manufacture.
2. Alkali manufacture.
3. Soap manufacture.
4. Bread-making.
5. Brewing.
6. Spirit manufacture.
7. Coal-tar products.
8. Sugar manufacture.
9. Painters' colours, oils, & varnishes
10. Oils and fats, including candle manufacture.
11. Gas manufacture.
12. Iron and steel manufacture.
13. Paper manufacture.
14. Photography.
15. Pottery and porcelain.
16. Glass making.
17. Dressing of skins.

18. Leather tanning.
19. Boot and shoe manufacture.
20. Silk dyeing.
21. Wool dyeing.
22. Cotton dyeing.
23. Cotton and linen bleaching.
24. Calico and linen printing.
25. Wool and worsted spinning.
26. Cloth weaving.
27. Cotton spinning.
28. Cotton weaving.
29. Flax spinning.
30. Linen weaving.
31. Silk throwing and spinning.
32. Silk weaving.
33. Jute spinning.
34. Jute weaving.
35. Lace manufacture.
36. Frame work. Knitting and hosiery.
37. Hat manufacture.
38. Telegraphy and telephony.
39. Electric lighting and power distribution.
40. Electro-metallurgy.
41. Metal-plate work.
42. Plumbers' work.
43. Silversmiths' work and plated wares.
44. Goldsmiths' work and manufacture of personal ornaments.
45. Watch and clock making.
46. Mechanical engineering.
47. Road carriage building.
48. Rail carriage building.
49. Typography.
50. Lithography.
51. Raising and preparation of ores.
52. Mine surveying.
53. Milling (flour manufacture).
54. Carpentry and joinery.
55. Ship carpentry.
56. Ship joinery.
57. Brickwork and masonry.
58. Plasterers' work.
59. Dressmaking.
60. Wood-work (for teachers of Elementary Schools).

12. Practical examinations may be held at different centres in bread-making, photography, boot and shoe manufacture, plumbers' work, goldsmiths' work, typography, mine surveying, and dressmaking, in addition to the written examination in those subjects. Special fees are charged for some of these examinations as stated in the syllabus of the subject.*

13. Candidates who have passed in any subject may be examined in a subsequent year, in any other subject, and may, on subsequent examination, obtain a certificate or prize in that subject.

14. Candidates may be examined in any two subjects, the examinations in which are held on separate days.

15. The examinations for the year 1893 will be held as follows:—

The written examination in all subjects except the five weaving subjects and mechanical engineering, part II., on Wednesday, May 3rd, from 7 to 10 p.m.

The examination in the weaving of cloth, cotton, linen, silk, and jute on Saturday, April 29th, from 3 to 7.

---

* A practical examination in "brickwork," open to those candidates only who have passed the Institute's examination in "brickwork and masonry," may be held some time in June, in London only, under the auspices of the Tylers and Bricklayers' Company.

The examination in mechanical engineering, part II., ordinary grade on Monday, May 8th, from 7 to 10.

The practical examination in bread-making, plumbing, and typography on Saturday, May 6th, from 3 to 7-30.

The practical examination in goldsmiths' work, on Wednesday, May 10th, from 6 to 10 p.m.

The practical parts of the examination in photography, and watch and clock making, and dressmaking on Saturday, May 18th, between 2 and 7.

The practical honours examination in mine surveying on May 26th and 27th.

Provided the necessary arrangements can be made, a practical examination in boot and shoe manufacture will be held early in June, at a date to be subsequently fixed.

16. Application for examination should be made to the local secretary not later than March 21st, 1893; and local secretaries should forward their returns, together with the examination fees, to the offices of the examinations department, Exhibition Road, London, S.W., not later than April 1st, 1893. Applications may, in exceptional cases, be received, so far as the office arrangements permit, after this date, but an extra fee of one shilling will be charged for each question paper supplied in response to such applications.

17. Manual training—see pages 149 to 151 of Manual.

LOCAL COMMITTEES.

18. Each local committee must consist of at least five members, and must have a chairman and a secretary. No member or officer of a local committee can be admitted to examination.

19. The duties of the local committee are: (*a*) To give publicity to the system of examinations, by the distribution of posters, notices, &c. (copies of these can be obtained from the examinations department of the Institute, Exhibition Road), and to give encouragement and advice to those persons who are likely to become candidates. (*b*) To superintend the examinations. Instructions for conducting the examinations will be sent to the secretary previous to the date on which the examinations are held. (*c*) To aid in the formation, and to watch the progress, of classes for instruction in technology. To visit such classes, and to examine and certify the register from personal knowledge of its accuracy. (See Rule 40.) (*d*) To distribute

the certificates and prizes forwarded to them. All sums granted by the Institute for prizes or as grants to classes (Rules 33-42) will be paid to the local committees, and the prize takers and others must look to the local committees for payment of such sums. The receipt of the secretary or other accredited officer of the local committee will be a full discharge to the Institute for all liability in respect of such sums.

20. Secretaries of local committees may charge a fee which should not exceed 2s. 6d. for every outside candidate examined, in addition to the fees payable to the Institute, such additional fee to be retained by the local committee.

QUALIFICATIONS OF TEACHERS.

21. Any person desiring to give instruction in any technological subject, with a view to these examinations, should apply, stating his qualifications as teacher through the local Secretary to the Superintendent of Technological Examinations, Exhibition Road, London, S.W. If approved, his name will be registered. No class will be registered the teacher of which is not so approved. Applications for the registration of classes must be received at the office, Exhibition Road, not later than November 15th, 1892.

22. Persons qualified as under may, on application by the Local Secretary to the Institute, be registered as teachers: (*a*) Any person who has obtained a full technological certificate in the honours grade of the subject to be taught. (*b*) Any person who is engaged in teaching science under the Science and Art Department, and who gives evidence of having acquired in the factory or workshop a practical knowledge of the subject to be taught. (*c*) Persons possessing special qualifications, to be considered by the Institute, for teaching technical subjects.

23. The Institute reserves the right of requiring the inspection of any class by one of its officers before registering it, and of refusing to comply with the application for the registration of any class or the approval of any teacher.

CERTIFICATES.

24. The certificates granted by the Institute will be of two kinds, according as candidates have or have not received regular instruction in a class registered by the Institute.

25. The one kind of certificate will be granted to those candidates only who pass the Institute's examination, and give evidence of

having made at least 20 attendances* in a class registered by the Institute in the subject of examination; and the name of the Institution in which the candidate has received his training will be inscribed on the certificate.

26. The second kind of certificate will be given to candidates who pass the Institute's Examination, but who may not have attended any registered class, or who have not made 20 attendances at such a class.

27. Classes in technological subjects held in any University of the United Kingdom, or in any of the Institutions referred to below (see Rule 30), will be considered as registered classes, and candidates from such classes will be eligible for the former of the two kinds of certificate (Rule 25).

28. Candidates who pass in technology alone without satisfying the Institute as to their knowledge of the principles of Science cognate to the subject of examination, will receive a provisional certificate, which will be exchanged for a full technological certificate whenever they produce evidence of having passed the examinations below referred to (Rules 30, 31).

29. To obtain a full certificate in any of the above-mentioned technological subjects (Rule 11), candidates will be required to pass the Institute's examination in technology, as well as such examinations of the Science and Art Department as are indicated in the syllabus of each separate subject, or to give other evidence, as mentioned in the following clause, of their possessing the necessary scientific knowledge.

30. The Institute will accept as evidence of the candidate's knowledge of the necessary science subjects: (1) A certificate stating that the candidate has obtained a degree in science at one of the Universities of the United Kingdom. (2) Certificates from the professors of any University of the United Kingdom, or of any of the undermentioned institutions† (the list to be added to from time

---

* Forms for registering attendances will be supplied by the Institute on application to the Examinations Department, Exhibition Road, London.

† Certificates will be accepted from the professors of the following Institutions: The Central Institution, Exhibition Road, London, and the Technical College, Finsbury, London (of the City and Guilds of London Institute); the Royal College of Science, London; University College, London; King's College, London; the Mason College, Birmingham; University College, Bristol; University College, Dundee; University College, Nottingham; Firth College, Sheffield; the Royal College of Science for Ireland, Dublin; University College, Aberystwyth; University College, Bangor; University College, Cardiff.

to time) stating that the candidate has attended courses of instruction under the professors, at one of these institutions, in the science subjects allied to the technological subject in which the full certificate is claimed, and has passed an examination in such science subjects satisfactory to the professors.

31. In certain subjects (see each separate syllabus), certificates showing that the candidate has passed the second grade examination of the Science and Art Department in geometrical drawing, as well as in freehand or model drawing, will be accepted in lieu of one science subject for the full technological certificate in either grade of the examination. The Institute may also accept other evidence than that indicated in rule 30 of the candidate's qualifications for the full certificate.

32. Teachers of the Institute are eligible for certificates and prizes, but they must be examined in accordance with the rules laid down by the Science and Art Department for the examination of teachers in science.

GRANTS TO LONDON CLASSES.

33. With the view of further encouraging the formation of classes in London for the study of any of the technological subjects (1 to 58) referred to above (Rule 11), the Institute will for the present and until further notice make grants* subject to the conditions laid down in this programme, on the results of the examination of students of such classes who have been under the instruction of teachers registered by the Institute.†

34. The students, on the result of whose examination grants will alone be made, must be persons actually engaged in the industry to which the examination refers. They will be required to obtain their employers' signature to a form testifying to this fact. This form, copies of which are supplied to the secretaries of the schools, must in all cases be attached to the claims for payment of grants.

35. The grants will be £1 for each candidate taking a second class in any subject, and £2 for each candidate taking a first class, unless such candidate shall have previously taken a second class in the same grade of the subject, in which case the grant will be £1 only. In the case of candidates who pass in the same year in two subjects, the grant will be paid on account of one success only.

---

* See Rule 34.

† No grants will be paid in the year 1893 on the results of the examination in subjects 59, "Dressmaking," nor 60, "Woodwork" (Elementary Teachers).

36. To obtain any grant on account of the success of a candidate, the teacher of the class must have given that candidate *at least* twenty lessons in the subject, each of not less than one hour's duration.

37. The lessons must be *bonâ-fide* lessons in the technological subject, and no payment will be made on account of lessons in a kindred science subject, for which grants are made by the Science and Art Department.

38. Grants will not be made twice on behalf of the same candidate in any subject, unless he obtain a certificate in a higher class or grade of that subject (see Rule 5).

39. The claim for payment of grants must be made on a form which will be forwarded to the school secretary. This form must be signed by the chairman or secretary, and by at least two other members of the school committee, and should be forwarded to the examinations department of the Institute not later than October 1st, 1893.

40. A register* of attendances must be kept by the teacher on a form which will be supplied on application. This register must be vouched for as accurate by the committee (see Rule 19*c*), and returned with the claim for payment.

41. No class will be registered as qualified to receive a grant, unless a return of the number of students attending the class be forwarded to the examinations department of the Institute on or before November 15th, 1892. The return must be made on a form which may be obtained on application to the Institute.

42. This offer of grants holds good for classes within the area only of the jurisdiction of the London County Council, and till May, 1893, but may be revoked or modified after that date.

43. The postage on all letters and the carriage on all parcels forwarded to the Institute must be prepaid.

All communications on the subject of the technological examinations to be addressed

CITY AND GUILDS OF LONDON INSTITUTE,
Examinations Department,
Exhibition Road,
London, S.W.

---

* Each Register contains space for twenty-five names. Secretaries should state how many copies will be required.

Particulars of the money prizes (Rule 6) offered for competition by the Livery Companies will be found on pp. 153-4 of the Programme of the Institute*, and on List of Prizes separately printed to be obtained at the Office, Exhibition Road.

The list of prizes awarded on the results of the examination, 1892, will be found on pp. 144-152 of the Programme of the Institute*.

MEMORANDUM BY THE CITY AND GUILDS OF LONDON INSTITUTE, FOR THE CONSIDERATION OF COUNTY COUNCILS AND MUNICIPAL BODIES ON THE EXAMINATION, INSPECTION, AND PAYMENT OF GRANTS IN AID OF LOCAL TECHNOLOGICAL AND TRADE CLASSES, ISSUED FEBRUARY 28TH, 1891.

The enactments of the Technical Instruction Act, 1889, and the subsequent provisions of the Local Taxation Act, 1890, by which local authorities in counties and in the larger municipalities have had funds placed at their disposal for the promotion of technical education, have changed the circumstances under which the City and Guilds of London Institute organised, as one of the branches of its work, its system of technological examinations and of payments on results of examinations throughout the United Kingdom.

These technological examinations were originally established in 1873 by the Society of Arts, when only six candidates were examined in three subjects. No payments of the teachers on the results of examinations were made until 1877, when the Clothworkers' Company undertook to make such payments on the same principles as regulated the grants made by the Science and Art Department for teaching science subjects. There were then 68 candidates for examination in eight subjects.

In 1879 the Institute assumed the responsibility for these payments, when the total number of candidates was 202, and in 1880 the control and management of the examinations were transferred by the Society of Arts to the Institute.

Since 1880 the numbers of candidates for examination in technological subjects, and of students in attendance at the registered classes, have very greatly increased, as may be seen from the following table:—

---

* The programme of Technological Examinations may be had, post free, for Eightpence. Application to be made to the City and Guilds of London Institute, Gresham College, London, E.C.

Year.	No. Subjects of Examination.	No. of Centres.	No. of Classes.	No. of Students in Attendance.	No. of Candidates for Examination.
1880	24	89	—	—	816
1881	23	78	—	2,500	1,563
1882	37	147	—	3,467	1,972
1883	47	154	—	4,052	2,397
1884	43	164	—	5,874	3,635
1885	42	167	263	6,396	3,968
1886	48	192	329	7,660	4,764
1887	48	216	365	8,613	5,508
1888	49	240	475	10,404	6,166
1889	46	231	520	11,874	6,448
1890	49	219	483	12,022	6,667
1891	53	245	519	13,202	7,322
1892	55	265	610	16,565	8,534

In the great majority of cases these certified classes have been directly or indirectly called into existence by the City and Guilds of London Institute, and these are now found not only in all the most important centres of trade and manufacture, but also in many small industrial towns and villages throughout the country. The experience thus acquired has shown that the system of payment by results of examinations is effective in the creation of classes for technological purposes, and that the number of candidates at the examinations is constantly increasing. Although the grants to each separate centre are comparatively small, they amount in the aggregate to a large sum ; and having regard to the area over which they are distributed, these grants are likely before long to be greatly in excess of the means at the disposal of the Institute for this branch of its work.

In London, the action of the Charity Commissioners in dealing with the funds of the city parochial charities, and the independent action of some of the city companies themselves, are creating well-organised polytechnics in various localities. These are intended to be the home of technical teaching of various kinds, and they will probably, as in the case of the Regent Street Polytechnic and the People's Palace, produce annually a large number of candidates for technological certificates. The utilisation for the purposes of technical education of the funds now in the hands of the county councils and municipalities, which there is good reason to believe will be permanently available for the same object, must operate in the same way and in a still greater degree.

Under these circumstances the Institute's technological examinations must continue to grow in influence and importance. They are the only means by which students engaged in various industries can have their proficiency in knowledge of the principles and methods of their trades tested by a recognised standard, and through which accredited certificates can be obtained. It can scarcely be expected that county councils, which, as a rule, are separately interested in only certain groups of industries, should undertake the conduct of such a general system, and it is now ascertained that the Science and Art Department has no intention of instituting examinations or inspection in technological or trade subjects. On the other hand, the Institute occupies already an authoritative position as the examining body in these subjects, which is generally recognised, not only in the United Kingdom but also in the largest of our Australian colonies.

Since the publication, in 1884, of the report of the Royal Commission on Technical Instruction, the Institute has been looking forward to the time when, in accordance with the recommendation of the Commissioners, "Local Authorities" would be empowered to establish, maintain, and contribute to the establishment and maintenance of the technical schools and classes, which hitherto have been somewhat insufficiently supported by private subscriptions and by students' fees, aided by the Institute's grants. During the last eight years the average income of the Institute, derived exclusively from the subscriptions of the Corporation and Livery Companies of London, has amounted to more than £25,000 a year, which, although a large sum, is insufficient for the growing needs of the technological classes throughout the country, in addition to the maintenance, in London, of the Central Institution at South Kensington, the Finsbury Technical College, the South London School of Art, and the assistance of other metropolitan schools. The Central Institution, which is a technical college of the highest grade, alone involves a charge on the Institute's fund of about £8,000 a year; and the advantages it offers, in the training of teachers, engineers, and works' managers, are available for students from all parts of the United Kingdom.

Having regard, therefore, to the varied work in which the Institute is now engaged, and to the increasing requirements of the technological classes, the Institute has resolved to discontinue the payment of grants on results after the examination in May, 1892, and to devote a substantial portion of the funds set free by the withdrawal of these grants to the improvement of the machinery connected with its system of technological examinations. At the same time the experience of the Institute shows that grants on results afford so useful and equitable a means of apportioning some part of the funds available for the purposes of technical education that the Institute cannot but express the hope that the payment of such grants will be continued by County Councils, especially as through the action which the Institute proposes to take such grants would in future be made under conditions yet more favourable to the advancement of the classes.

In further explanation of the position which the Institute, in consequence of the altered circumstances above referred to, is prepared in future to occupy in relation to the technological and trade classes throughout the country, the attention of County and Borough Councils is respectfully invited to the following points :—

1. Recent legislation has placed funds at the disposal of County Councils for the purposes of technical education, and has imposed on local authorities the responsibility of determining the best means of utilising those funds in accordance with the provisions of the Technical Instruction Act.

2. Whilst the Science and Art Department pays grants on results on all subjects of instruction included in its directory, no such payments are made by the department on the technological and trade subjects included in the Institute's programme. Hitherto, grants on such subjects have been paid by the Institute, but, for the reasons already stated, these grants will be discontinued after the year 1892.

3. The Institute is prepared to continue, and to defray the cost of, its present system of technological examinations, and to improve it from time to time : (*a*) By the addition of further practical tests. (*b*) By adapting the examinations to a still greater extent to local requirements and to the different sections into which many trades are now divided (*c*) By the addition of new subjects of examination.

4. The administration of the present system of examinations involves : (*a*) The organisation of technical classes adapted to different trades. (*b*) The selection and appointment of competent examiners and local superintendents. (*c*) Enquiry into the qualifications and the registration of teachers. (*d*) The preparation of syllabuses of instruction and examination. (*e*) The recommendation of books of reference for the use of students, and for the formation of technical libraries in connection with separate

trades. (*f*) The examination of registers of attendance of students at classes, and of certificates as to their occupations. (*g*) The award of different grades of certificates, of silver and bronze medals, and of the money prizes provided by the separate livery companies of London.

5. The present system of examinations would be further improved by the inspection of classes by competent experts in different branches of trade, and by other persons possessing the necessary scientific knowledge and educational experience. Information might thus be obtained as to the efficiency of the teaching, the provision made for practical instruction in the laboratory or workshop, and the adequacy of the equipment as regards apparatus, models, and machinery. The Institute has under consideration the expediency of organising such a system of inspection.

6. The Institute would be prepared to submit to County and Borough Councils co-operating with it reports on the attendance of students at technological classes, and on the results of the examination of such students, which would serve to guide County Councils in making grants in aid of the maintenance of such classes.

7. It is suggested that the grants in aid might be of two kinds: (*a*) Capitation grants on students in regular attendance at classes certified by the Institute. (*b*) Grants on the results of the Institute's technological examinations.

8. No grants have been hitherto given under section (*a*), although the want of such assistance has been generally felt and fully recognised. The grants under section (*b*), given by the Institute, consist of £2 and £1, on behalf of every candidate who takes a first-class or second-class certificate, and is actually engaged in the trade connected with the subject of examination.

9. The Institute possesses the administrative machinery required for furnishing local authorities with the necessary detailed reports for the award of grants under each of the above sections, and is prepared to place its technical and educational experience at the service of County and Borough Councils for the purposes hereinbefore indicated.

10. The Institute would be further prepared to make arrangements with County or Borough Councils co-operating with it, for submitting reports on the general efficiency of technological classes, and for affording assistance in the organisation of new schools or

classes for the promotion of technical education in connection with local trades and industries.

These suggestions are made with the view of indicating the position which the Institute has occupied during the last twelve years, and that which it is prepared to occupy in future, in relation to technical education throughout the country; and of enabling County and Borough Councils, if they so desire, to avail themselves of the assistance thus offered in improving, and in subsidising, by the payment of grants, the technological and trade classes now established in the chief centres of industry, many of which, it is feared, without such help, will be unable to continue to exist.

Any further information which may be desired with respect to the suggestions contained in this memorandum will be forwarded, on application to Sir Philip Magnus, the superintendent of technological examinations, City and Guilds of London Institute, Examinations Department, Exhibition Road, London, S.W.

Science and Art Examinations.—For particulars of these examinations see pp. 121-125 ante. The Directory of the Science and Art Department is published annually (price 6d.), and may be obtained from Messrs. Eyre and Spottiswoode, East Harding Street, London, E.

Scholarships and Exhibitions.—The following are offered annually by the Science and Art Department:—

ROYAL EXHIBITIONS, NATIONAL SCHOLARSHIPS, AND FREE STUDENTSHIPS.—The following are awarded in competition at the annual May Science examinations of the Department:—

Twelve Royal Exhibitions—four open each year—to the Royal College of Science, London.

Nine Royal Exhibitions—three open each year—to the Royal College of Science, Dublin.

Sixty-six National Scholarships—twenty-two open each year—tenable, at the option of the holder, at either the Royal College of Science, London, or at the Royal College of Science, Dublin.

Eighteen Free Studentships—six open each year—to the Royal College of Science, London.

No candidate can obtain more than one of these three classes of scholarships, viz., Royal Exhibitions, National Scholarships, Free Studentships.

A ROYAL EXHIBITION entitles the holder to free admission to lectures and laboratories and to instruction during the course for the Associateship, about three years, in the Royal College of Science, London, or the Royal College of Science, Dublin, with a maintenance allowance of £50 a year.

A NATIONAL SCHOLARSHIP entitles the holder to free admission to lectures and laboratories and to instruction during the course for the Associateship, about three years, at either the Royal College of Science, London, or the Royal College of Science, Dublin, at the option of the holder, with a maintenance allowance of 30s. a week for the session of about forty weeks each year, and third class railway fare for one journey to and fro, each session, between the home of the scholar and London or Dublin, as the case may be.

A FREE STUDENTSHIP entitles the holder to free admission to the lectures and laboratories and to instruction during the course for the Associateship, about three years, in the Royal College of Science, London, but not to any maintenance or travelling allowance.

The Royal Exhibitions and Free Studentships are open to all British subjects.

The National Scholarships are only open to students on account of whose instruction payments on results can be claimed. (See § XL. sec. iii., S. and A. Directory.)

All the Exhibitions, Scholarships, and Studentships are held on the condition that the holder attends the courses of instruction regularly, complies with all the rules laid down for his guidance, and passes the examinations required for the associateship.

Private students who have been for more than one session in the Royal College of Science, London or Dublin, local exhibitioners, and science teachers in training, are not eligible for Royal Exhibitions, National Scholarships, or Free Studentships.

Competitors for Royal Exhibitions, National Scholarships, or Free Studentships must send in Form No. 330*a* before the 15th April, and Form No. 400 before the 10th June.

The competition for the Royal Exhibtions, the Free Studentships, and for half of the National Scholarships, is determined as follows:—

The maximum number of marks obtainable in each subject, except mathematics, is in the elementary stage, 100; advanced stage, 200; honours, 400; with half the above maximum marks for practical chemistry, or practical metallurgy, or the practical honours examinations specified in sec. 15, p. 31 (S. and A. Directory), in addition to those for the theoretical division of the same subject. In mathematics the numbers are in the 1st stage, 100; 2nd stage, 200; 3rd stage, 300, honours, 500; 4th stage, 150; 5th stage, 300, honours, 500; 6th stage, 300; 7th stage, 400, honours, 600. But the number of marks gained by the candidate in each subject in the elementary stage (or in the 1st stage in mathematics) is diminished by 50 per cent, and the number of marks gained in the advanced stage by 40 per cent, and in honours by 30 per cent, of the total marks obtainable in the respective stages. The remainder are then added together to determine the candidate's position.

But no candidate is awarded a Royal Exhibition, National Scholarship, or Free Studentship who has not obtained in mathematics at least 60 per cent of the total number of marks obtainable in the 1st stage, or a second class in some higher stage or in honours. This success may have been obtained in a previous year, but no marks are counted except for successes obtained in the current year.

The competition for the moiety of the National Scholarships excepted from the preceding rules will be decided by giving five scholarships each year to the candidates who obtain the highest aggregate marks in physics and chemistry (Subjects 8, 9, 10, 10*p*, 11, and 11*p*); four to the candidates who obtain the highest aggregate in mechanics (Subjects 1, 2, 6, 7, and 22); and two to the candidates who obtain the highest aggregate in human physiology, general biology, zoology, and botany (Subjects 14, 15, 16, and 17); provided that they have obtained, in the current or in some previous year, at least a first-class in the elementary stages of one division of theoretical mechanics (Subject 6*a* or *b*) one division of physics (Subjects 8*a* or *b* or *c*, and 9, or alternative physics), chemistry (Subject 10*p*, and in 10, or alternative chemistry), and mathematics, Stage 1.

WHITWORTH SCHOLARSHIPS.—Sir Joseph Whitworth's Exhibitions and Scholarships* are also awarded in competition at the May examinations. Candidates for Whitworth Exhibitions and Scholarships must register their names as competitors by sending in Form No. 330 before 15th April, and send in Form No. 400 before the 10th June. Further details with regard to these Scholarships will be found in the Whitworth Prospectus, which may be obtained from the Department, price 3d.

---

* Four Whitworth Exhibitions of the annual value of £125 for three years, and thirty Whitworth Scholarships of £50 per annum (one year) were offered in 1892.

Subjects of Technical Instruction.—The Technical Instruction Act, 1889 (Sec. 8), prescribes that Technical Instruction shall include instruction in the branches of Science and Art, with respect to which grants are for the time being made by the Department of Science and Art, and any other form of instruction which may for the time being be sanctioned by that Department by a minute laid before Parliament, and made on the representation of a local authority that such a form of instruction is required by the circumstances of its district. The following is the official list of subjects which have been sanctioned since the passing of the Technical Instruction Act:—

Agricultural engineering (including driving and working steam engines and machinery).

Agriculture (practice of) and agricultural processes (including practical farm work, vegetable and fruit growing, fruit storing, market gardening, glass houses, management of live stock, dairy work and cheese making, thatching, fence and mow-making, sheep shearing, hedging, ditching, rick making, shepherding, under draining, stacking, ploughing).

Alkali manufacture.

Ambulance work.

Art needlework.

Banking (principles of) and financial science.

Bee keeping.

Bleaching, dyeing, and printing.

Boat building.

Book binding.

Book keeping and commercial terms; office work.

Boot and shoe manufacture.

Bread making.

Brewing.

Brick making.

Cabinet making.

Carving in wood, stone, and other materials.

Carpentry and joinery.

Carriage building (road and rail).

Casting and moulding in plaster, gelatine, &c.

Coal tar products.

Commercial law, history, geography, arithmetic, and correspondence.

Cookery.

Designing for porcelain, pottery, and glass.

Designing for textile fabrics, silks, and calico.

Designing for printing and lace.

Designing for metal work and vases.
Domestic economy and household thrift.
Economics of trade and finance.
Electrical engineering—electric lighting and transmission of power; electrical instrument making.
Electro-metallurgy.
Engraving.
Entomology.
Etching.
Farriery.
Forestry.
Framework knitting and hosiery.
Fretwork and turning.
Fuel.
Gardening (practical).
Gas manufacture.
Gilding.
Glass manufacture.
Goldsmiths' work.
Hand spinning and weaving.
Hat manufacture.
Horticulture and arboriculture.
Hosiery manufacture.
Household sewing, dressmaking, and cutting out.
Hygiene (domestic).
Insurance.
Iron and steel, the manufacture and working of.
Iron founding.
Lace making and manufacture.
Laundry work.
Leather preparation and leather industries.
Manual and theoretical instruction in wood, stone, brick, metal, leather, glass, clay, basket, and fancy straw work.
Marquetry work.
Milling (flour manufacture).
Mechanical and architectural drawing.
Mechanical engineering.
Metal-plate work.
Mine surveying.
Mining (including quarrying, raising, and preparation of ores) and prospecting.
Modelling in various materials.
Modern languages—French, German, Spanish, Italian, Portuguese.
Music—Singing and musical notation; instrumental and orchestral music.
Nursing.
Oils and fats, including candle manufacture.
Oils, colours, and varnishes, manufacture of.
Paper manufacture.
Pattern making.
Pharmacy.
Photography.
Pisciculture, fishing, and subjects connected therewith.
Plasterers' work.
Plumbing.
Political economy.
Pottery and porcelain manufacture.
Poultry keeping.
Précis writing.
Printing (including typography, lithography, &c.).
Repoussé work.
Road making (principles of).
Rope making.
Sanitary engineering.
Ship carpentry and joinery.
Silversmiths' work.
Shorthand.
Slöjd.
Soap manufacture.
Spirit manufacture.
Sugar manufacture.
Surveying, levelling, and taking out quantities.
Telegraphy and telephony.
Textile fabrics (spinning, weaving, and silk throwing).
Tools, use of.
Typewriting.
Veterinary science.
Watch and clock making.

APPENDIX.

PART I.

THE TECHNICAL INSTRUCTION ACT, 1889.

THE LOCAL TAXATION (CUSTOMS AND EXCISE) ACT, 1890.

THE EDUCATION CODE (1890) ACT, 1890.

THE TECHNICAL INSTRUCTION ACT, 1891.

THE SCHOOLS FOR SCIENCE AND ART ACT, 1891.

THE TECHNICAL SCHOOLS (SCOTLAND) ACT, 1887.

THE TECHNICAL INSTRUCTION AMENDMENT (SCOTLAND) ACT, 1892.

TECHNICAL INSTRUCTION ACT, 1889.

An Act to facilitate the Provision of Technical Instruction. [30th August, 1889].

A.D. 1889.

BE it enacted by the Queen's most Excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, as follows :—

Power for local authority to supply or aid the supply of technical instruction.

1.—(1.) A local authority may from time to time out of the local rate supply or aid the supply of technical or manual instruction, to such extent and on such terms as the authority think expedient, subject to the following restrictions, namely :—

(*a.*) The local authority shall not out of the local rate supply or aid the supply of technical or manual instruction to scholars receiving instruction at an elementary school in the obligatory or standard subjects prescribed by the minutes of the Education Department for the time being in force;

(*b.*) It shall not be required, as a condition of any scholar being admitted into or continuing in any school aided out of the local rate, and receiving technical or manual instruction under this Act, that he shall attend at or abstain from attending any Sunday school or any place of religious worship, or that he shall attend any religious observance or any instruction in religious subjects in the school or elsewhere: Provided that in any school, the erection of which has been aided under this Act, it shall not be required, as a condition of any scholar being admitted into or continuing in such school, that he shall attend at or abstain from attending any Sunday school or any place of religious worship, or that he shall attend any religious observance or any instruction in religious subjects in the school or elsewhere;

A.D. 1889.

(*c.*) No religious catechism or religious formulary, which is distinctive of any particular denomination, shall be taught at any school aided out of the local rate, to a scholar attending only for the purposes of technical or manual instruction under this Act, and the times for prayer or religious worship, or for any lessons or series of lessons on a religious subject, shall be conveniently arranged for the purpose of allowing the withdrawal of such scholar therefrom;

(*d.*) A local authority may, on the request of the school board for its district or any part of its district, or of any other managers of a school or institution within its district for the time being in receipt of aid from the Department of Science and Art, make out of any local rate raised in pursuance of this Act, to such extent as may be reasonably sufficient, having regard to the requirements of the district, but subject to the conditions and restrictions contained in this section, provision in aid of the technical and manual instruction for the time being supplied in schools or institutions within its district, and shall distribute the provision so made in proportion to the nature and amount of efficient technical or manual instruction supplied by those schools or institutions respectively;

(*e.*) Where such other managers of a school or institution receive aid from a local authority in pursuance of this section, the local authority shall, for the purposes of this Act, be represented on the governing body of the school or institution in such proportion as will, as nearly as may be, correspond to the proportion which the aid given by the local authority bears to the contribution made from all sources other than the local rate and money provided by Parliament to the cost of the technical or manual instruction given in the school or institution aided;

(*f.*) If any question arises as to the sufficiency of the provision made under this section, or as to the qualification of any school or institution to participate in any such provision, or as to the amount to be allotted to each school or institution, or as to the extent to which, or mode in which, the local authority is to be represented on the governing body of any such school or institution, the question shall be determined by the Department of Science and Art: Provided that no such provision out of any rate raised in pursuance of this Act, shall be made in aid of technical or manual instruction in any school conducted for private profit; and

(*g.*) The amount of the rate to be raised in any one year by a local authority for the purposes of this Act shall not exceed the sum of one penny in the pound.

(2.) A local authority may for the purposes of this Act appoint a committee consisting either wholly or partly of members of the local authority, and may delegate to any such committee any powers exercisable by the authority under this Act, except the power of raising a rate or borrowing money.

(3.) Nothing in this Act shall be construed so as to interfere with any existing powers of school boards with respect to the provision of technical and manual instruction.

Provision for entrance examination.

2. It shall be competent for any school board or local authority, should they think fit, to institute an entrance examination for persons desirous of attending technical schools or classes under their management or to which they contribute.

Parliamentary grants in aid of technical instruction.

3. The conditions on which parliamentary grants may be made in aid of technical or manual instruction shall be those contained in the minutes of the Department of Science and Art in force for the time being.

Provisions as to local authorities.

4.—(1.) For the purposes of this Act the expression "local authority" shall mean the council of any county or borough, and any urban sanitary authority within the meaning of the Public Health Acts.

(2.) The local rate for the purposes of this Act shall be—

(*a.*) In the case of a county council, the county fund;

(*b.*) In the case of a borough council, the borough fund or borough rate;

A.D. 1889.

(*c.*) In the case of an urban sanitary authority not being a borough council, the district fund and general district rate, or other fund or rate applicable to the general purposes of the Public Health Acts;

(3.) A county council may charge any expenses incurred by them under this Act on any part of their county for the requirements of which such expenses have been incurred.

(4.) A local authority may borrow for the purposes of this Act—

51 & 52 Vict. c. 41.

(*a.*) In the case of a county council, in manner provided by the Local Government Act, 1888:

(*b.*) In the case of a borough council, as if the purposes of this Act were purposes for which they are authorised by section one hundred and six of the Municipal Corporations Act, 1882, to borrow:

45 & 46 Vict. c. 50.

(*c.*) In the case of an urban sanitary authority not being a borough council, as if the purposes of this Act were purposes for which they are authorised to borrow under the Public Health Acts.

Audit of accounts of aided schools.

5. Where the managers of a school or institution receive aid from a local authority in pursuance of this Act, they shall render to the local authority such accounts relating to the application of the money granted in aid, and those accounts shall be verified and audited in such manner as the local authority may require, and the managers shall be personally liable to refund to the local authority any money granted under this Act, and not shown to be properly applied for the purposes for which it was granted.

Audit of accounts of urban sanitary authority.

6. The accounts of the receipts and expenditure of an urban sanitary authority under this Act shall be audited in like manner and with the like incidents and consequences, as the accounts of their receipts and expenditure under the Public Health Act, 1875.

Application of the Act to Ireland.

7. In the application of this Act to Ireland—

41 & 42 Vict. c. 52.

(1.) The expression "local authority" shall mean the urban or rural sanitary authority, as the case may be, within the meaning of the Public Health (Ireland) Act, 1878.

(2.) The local rate for the purposes of this Act shall be—

(*a.*) in the case of an urban sanitary authority, the rate or fund applicable to the expenses incurred or payable by such authority in the execution of the Public Health (Ireland) Act, 1878, under the provisions of the said Act;

(*b.*) in the case of a rural sanitary authority, the rate or rates out of which special expenses incurred in respect of any contributory place or places are payable under the provisions of the said Act.

(3.) A local authority may borrow for the purposes of this Act as if the purposes of this Act were purposes for which the sanitary authority are authorised to borrow under the Public Health (Ireland) Act, 1878.

(4.) Any reference to the Public Health Act, 1875, shall be construed as a reference to the Public Health (Ireland) Act, 1878.

Meaning of technical and manual instruction.

8. In this Act—

The expression "technical instruction" shall mean instruction in the principles of science and art applicable to industries, and in the application of special branches of science and art to specific industries or employments. It shall not include teaching the practice of any trade or industry or employment, but, save as aforesaid, shall include instruction in the branches of science and art with respect to which grants are for the time being made by the Department of Science and Art, and any other form of instruction (including modern languages and commercial and agricultural subjects), which may for the time being be sanctioned by that Department by a minute laid before Parliament and made on the representation of a local authority that such a form of instruction is required by the circumstances of its district.

The expression "manual instruction" shall mean instruction in the use of tools, processes of agriculture, and modelling in clay, wood, or other material.

Extent of Act.

9. This Act shall not extend to Scotland.

Short title.

10. This Act may be cited as the Technical Instruction Act, 1889.

LOCAL TAXATION (CUSTOMS AND EXCISE) ACT, 1890.

A.D. 1890.

An Act for the Distribution and application of certain Duties of Customs and Excise: and for other purposes connected therewith.

[18th August, 1890.]

WHEREAS certain local taxation (customs and excise) duties have by an Act of the present session been directed to be paid to the same local taxation accounts as the local taxation probate duty, and it is expedient to provide for the distribution and application of the duties so paid:

Be it therefore enacted by the Queen's most Excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, as follows:

Application of English share of customs and excise duties.

1.—(1.) Out of the English share of the local taxation (customs and excise) duties paid to the local taxation account on account of any financial year—

(*a*) The sum of three hundred thousand pounds shall be applied for such purposes of police superannuation in England as herein-after mentioned;

(*b*) The residue shall, unless Parliament otherwise determines, be distributed between county and county borough funds, and carried to the Exchequer contribution accounts of those funds respectively, and applied under the Local Government Act, 1888, as if it were part of the English share of the local taxation probate duty, and shall be the subject of an adjustment between counties and county boroughs, according to section thirty-two of the said Act, by the Commissioners under that Act.

51 & 52 Vict. c. 41.

A.D. 1890.

(2.) The council of any such county or county borough may contribute any sum received by such council in respect of the residue under this section, or any part of that sum, for the purposes of technical education within the meaning of the Technical Instruction Act, 1889, and may make that contribution over and above any sum that may be raised by rate under that Act.

(3.) A county council may make any such contribution by giving the amount of the contribution or any part of that amount to any town council or other urban sanitary authority in their county for the purpose of the same being applied by such council or authority under the Technical Instruction Act, 1889, over and above any sum which can be raised under that Act by rate by such council or authority.

52 & 53 Vict. c. 76.

(4.) The council for any county to which the Welsh Intermediate Education Act, 1889, applies may contribute any sum received by such council under this section in respect of the said residue or any part of that sum towards intermediate and technical education under that Act, in addition to the amount which the council can under that Act contribute for such education.

52 & 53 Vict. c. 40.

Application of Scotch share of customs and excise duties.

2. Out of the Scotch share of the local taxation (customs and excise) duties paid to the local taxation (Scotland) account on account of any financial year—

(i.) The sum of forty thousand pounds shall be applied for such purposes of police superannuation in Scotland as herein-after mentioned;

(ii.) A sum not exceeding forty thousand pounds shall be applied in relief from the payment of school fees in the State-aided schools in Scotland of children in the compulsory standards of the Scotch code, and shall be distributed in such manner and in accordance with such conditions as may be set forth for the present financial year in a minute of the Scotch Education Department to be forthwith laid before Parliament, and in every year subsequent to the present year in the Scotch Education Code annually submitted to Parliament; and

A.D. 1890.

(iii.) The residue shall, until Parliament otherwise determines, be diminished by any charge, or increased by any credit, pursuant to the provisions of the Contagious Diseases (Animals) (Pleuro Pneumonia) Act, 1890, and distributed by the Secretary for Scotland—

53 & 54 Vict. c 14.

(*a.*) to the amount of fifteen thousand pounds as a contribution to the cost of medical officers and sanitary inspectors appointed under the Public Health (Scotland) Act, 1867, or under the Local Government (Scotland) Act, 1889, as the case may be, in such manner and according to such scale and regulations as may be prescribed by the Secretary for Scotland;

30 & 31 Vict. c. 101. 52 & 53 Vict. c. 30.

(*b.*) and, subject as aforesaid, among the county councils of counties and town councils acting as such or as police commissioners of burghs, and police commissioners of police burghs, in Scotland, in proportion to the respective valuations of such counties and burghs and police burghs as such valuations shall be ascertained by the Secretary for Scotland at the date of such distribution, the share falling to such councils and commissioners respectively to be applied to the relief of local rates levied by them respectively, in such manner as they may determine.

Provided nevertheless that the council of any such county or burgh and the Commissioners of any such police burgh may contribute any sum received by such council or commissioners (as the case may be) in respect of the said residue or any part of that sum for the purpose of technical education within the meaning of the Technical Schools (Scotland) Act, 1887, and may make that contribution over and above any sum that may be paid out of any school fund under that Act whether or not any such sum has been paid out of such fund.

50 & 51 Vict. c. 64.

Application of Irish share of customs and excise duties.

3.—(1.) The Irish share of the local taxation (customs and excise) duties paid to the local taxation (Ireland) account on account of any financial year shall be applied as follows, that is to say, out of such share—

A.D. 1890.

(i.) The sum of seventy-eight thousand pounds shall be paid to the Commissioners of Education, and shall be distributed by them as nearly as possible in proportion to the average number of pupils daily attending the several national schools in Ireland in aid of which salaries or any other money payments are paid by the said Commissioners, estimated according to the rules and regulations of the said Commissioners for the time being in force, and such distribution shall be made according to rules to be framed by the said Commissioners with the consent of the Treasury and the amounts—

(*a.*) in the case of every national school in a union which is not a contributory union, shall be paid for the benefit of the schools which are not model schools as an addition to the local contributions to or in respect of such schools within the financial year fixed by the last-mentioned rules; and

(*b.*) in the case of every national school in a union which is a contributory union, shall be paid to the guardians of such union, provided that no such payment shall be made to the guardians of any contributory union in excess of the amount paid by them within the financial year fixed as aforesaid, pursuant to the provisions of the National School Teachers (Ireland) Act, 1875, out of the poor rate; 38 & 39 Vict. c. 96.

(*c.*) all sums so paid to the guardians of a contributory union shall be applied in aid of the poor rate; and

(*d.*) any sums not paid to the guardians of a contributory union by reason of the proviso restricting the amount of payment herein-before contained shall be paid for the benefit of the national schools in the union which are not model schools in the manner herein-before mentioned.

(ii.) The residue of such share shall, unless Parliament otherwise determines, be paid to the Intermediate Education Board for Ireland, and be distributed and applied by

A.D. 1890.

them amongst schools to which the provisions of the Intermediate Education (Ireland) Act, 1878, apply for both or either of the purposes following, but for no other purposes, namely:

41 & 42 Vict. c. 66.

(*a*) for the payment to managers of schools complying with the conditions prescribed under the said Act, of fees dependent on the results of public examinations of students; and

(*b*) for the payment of prizes and exhibitions, and the giving of certificates to students,

according to a scheme to be settled by the said Board with the approval of the Lord Lieutenant and the Treasury.

(2.) Expressions which have meanings assigned to them by the National School Teachers (Ireland) Act, 1875, shall have the same meanings respectively in this section.

Distribution of sums for police superannuation in England and Scotland.

4.—(1.) Out of the annual sum applicable under this Act for police superannuation in England one hundred and fifty thousand pounds shall be paid to the receiver for the Metropolitan police district, and applied in aid of the police superannuation fund for the Metropolitan police force.

(2.) The remaining half of the said annual sum shall be distributed among the police authorities of the other police forces in England other than the police force of the city of London, and the annual sum of forty thousand pounds applicable for police superannuation in Scotland shall be distributed among the police authorities of police forces in Scotland; and the amounts to be so distributed shall be distributed and applied towards the superannuation of the police forces in such manner and in accordance with such conditions and regulations as may be provided by or in pursuance of any Act hereafter passed, and until so distributed and applied shall remain to the credit of the local taxation accounts.

Distribution of local taxation (customs and excise) duties.
51 & 52 Vict. c. 41.
25 & 53 Vict.

5. All sums paid in respect of the local taxation (customs and excise) duties to any local taxation accounts mentioned in section twenty-one of the Local Government Act, 1888, in section twenty-one of the Local Government (Scotland) Act,

1889, or in the Probate Duties (Scotland and Ireland) Act, 1888, shall be paid and distributed by the like central authority as in the case of the local taxation probate duty, and the enactments relating to such distribution shall, subject to the express provisions of this Act, apply accordingly; the said accounts are in this Act referred to by the names given them in the said Acts. 51 & 52 Vict. c. 60.

6. In this Act, unless the context otherwise requires:— Definitions.

The expressions "burgh," "police burgh," and "police commissioners," have respectively the same meaning as in the Local Government (Scotland) Act, 1889.

The expression "local taxation probate duty" means the moiety of probate duties which under section twenty-one of the Local Government Act, 1888, and section twenty-one of the Local Government (Scotland) Act, 1889, and section two of the probate Duties (Scotland and Ireland) Act, 1888, is directed to be paid to the several local taxation accounts in England, Scotland, and Ireland respectively. 51 & 52 Vict. c. 60.

The expression "central authority" means, as respects England, the Local Government Board; as respects Scotland, the Secretary for Scotland; and as respects Ireland, the Lord Lieutenant.

7. This act may be cited as the Local Taxation (Customs and Excise) Act, 1890. Short title.

EDUCATION CODE (1890) ACT, 1890.

An Act for the purpose of making operative certain articles in the Education Code, 1890.
[25th July, 1890.]

BE it enacted by the Queen's most Excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, as follows:

ELEMENTARY EDUCATION NOT TO BE CONDITION OF GRANT TO EVENING SCHOOLS

1. It shall not be required as a condition of a parliamentary grant to an evening school that elementary education shall be the principal part of the education there given, and so much of the definition of the term "elementary school" in section three of the Elementary Education Act, 1870, as requires that elementary education shall be the principal part of the education given in an elementary school shall not apply to evening schools.

PROVISIONS AS TO SPECIAL GRANTS TO SCHOOLS.

2.—(1.) Where the population of the school district in which a public elementary school is situate, or the population within two miles, measured according to the nearest road from the school, is less than five hundred, and there is no other public elementary school recognised by the Education Department as available for the children of that district, or that population (as the case may be), a special parliamentary grant may be made annually to that school to the amount of £10.

(2.) The said special grant shall be in addition to the ordinary annual parliamentary grant, and in addition to any special parliamentary grant made under section 19 of the Elementary Education Act, 1876, and shall not be included in the calculation of the ordinary annual parliamentary grant for the purpose of determining whether it does or does not exceed any maximum fixed by law.

(3.) Provided that no school shall be entitled to receive a special grant under this section unless it satisfies the conditions contained in the minutes of the Education Department in force for the time being with regard to special grants under this section.

TECHNICAL INSTRUCTION ACT, 1891.

A.D. 1891.

An Act to amend the law relating to Technical Instruction. [26th March, 1891.]

BE it enacted by the Queen's most Excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, as follows:

Explanation of powers of local authority as to technical instruction 52 & 53 Vict. c. 76.

1.—(1.) Subject to the conditions and restrictions contained in the Technical Instruction Act, 1889, a local authority may—

(*a.*) Make such provision in aid of the technical or manual instruction for the time being supplied in a school or institution outside its district as may, in the opinion of the authority, be necessary for the requirements of the district in cases where similar provision cannot be so advantageously made by aiding a school or institution within its district; and

(*b.*) Provide or assist in providing scholarships for or pay or assist in paying the fees of students ordinarily resident in the district of the local authority at schools or institutions within or outside that district.

(2.) In distributing the provision made in aid of technical or manual instruction, the local authority may consider all the circumstances of the case, and shall not be bound to distribute the provision so made exclusively in proportion to the nature and amount of efficient technical or manual instruction supplied by those schools or institutions respectively.

Application of balances. 53 & 54 Vict. c. 60.

2. Any moneys received by a county council under subsection (1) (*b*) of section one of the Local Taxation (Customs and Excise) Act, 1890, and directed by resolution of the county council to be appropriated or to be set aside for the purposes of

technical or manual instruction, shall, although not expended or specifically contributed or allotted in whole or in part before the end of the financial year, remain applicable for such purposes, and shall not be applied in manner provided by sub-section (2) and the following sub-sections of section twenty-three of the Local Government Act, 1888, until the county council shall have made an order for such application. 51 & 52 Vict. c. 41.

Where a council shall have referred to a committee the question of appropriating to purposes of technical or manual instruction any sum consisting of the whole or any part of such moneys, this section, unless and until the council otherwise direct, shall, until the committee shall have made their report and the council shall have arrived at a decision thereon or the appointment of the committee shall have been rescinded, apply to such sum as if the same had been directed by the council to be appropriated to such purposes.

Construction of 53 & 54 Vict. c. 60. s. 1.

3. The expression "technical education" in section one of the Local Taxation (Customs and Excise) Act, 1890, shall be deemed to include both technical and manual instruction within the meaning of the Technical Instruction Acts, 1889 and 1891.

Short title and construction.

4. This Act may be cited as the Technical Instruction Act, 1891, and shall be construed as one with the Technical Instruction Act, 1889, and this Act and the Technical Instruction Act, 1889, may be cited together as the Technical Instruction Acts, 1889 and 1891.

SCHOOLS FOR SCIENCE AND ART ACT, 1891.

A.D. 1891.

An Act to facilitate the transfer of Schools for Science and Art to Local Authorities.

[5th August, 1891.]

BE it enacted by the Queen's most Excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, as follows:

Transfer of school for science and art or literary or scientific institution to local authority.
17 & 18 Vict. c. 112.
52 & 53 Vict. c. 76.
33 & 34 Vict. c. 75.

1.—(1.) The managers of any school for science and art, or for science, or for art, or of any institution to which the Literary and Scientific Institutions Act, 1854, applies, may make an arrangement with any local authority within the meaning of the Technical Instruction Act, 1889, for transferring the school or institution to that authority, and the local authority may assent to any such arrangement and give effect thereto, subject to the provisions of that Act.

(2.) The provisions of section twenty-three of the Elementary Education Act, 1870, with respect to arrangements for the transfer of schools shall apply in the case of arrangements for the transfer of schools or institutions in pursuance of this section, with this modification, that for the purposes of transfers to a local authority references to the school board shall be construed as references to the local authority and references to the Education Department as references to the Department of Science and Art, and references to a school shall, in the case of an institution not being a school, be construed as references to the institution.

(3.) In this section the expression "managers" includes all persons who have the management of any school or institution, whether the legal interest in the site and buildings of the school or institution is or is not vested in them.

Short title.

2. This Act may be cited as the Schools for Science and Art Act, 1891.

TECHNICAL SCHOOLS (SCOTLAND) ACT, 1887.

An Act to facilitate the establishment of Technical Schools in Scotland. [16th September, 1887.]

A.D. 1887.

BE it enacted by the Queen's most Excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, as follows:

Short title and construction.

1. This Act may be cited as the Technical Schools (Scotland) Act, 1887, and shall in so far as consistent with the tenor thereof be construed as one with the Education (Scotland) Acts, 1872 to 1883.

Commencement and extent of Act.

2. This Act shall commence to have effect in each parish and burgh in Scotland from and after the next ensuing triennial election of a school board therein respectively, and shall apply to Scotland only.

Power for school board to provide technical school.

3.—(1.) A school board may pass a resolution that it is expedient to provide a technical school for its district, and thereupon may, subject to the provisions of this Act, provide such a school accordingly, and pay the expenses of providing and maintaining the school, including the expense, if any, of providing tools, apparatus, and drawing and other materials, in so far as the same remain the property of the school board, out of the school fund. The subjects to be taught in the school shall be such as may from time to time be approved of by the Scotch Education Department.

The school board shall fix the school fees to be paid for attendance at each technical school under their management, and such fees shall be paid to the treasurer of the board, and a separate account shall be kept of the amount of the fees derived from such school, and it shall be lawful for the school board, if they see fit, to pay to the teachers of a technical school the fees derived from such school, and to divide the

A.D. 1887.

same among them as the school board shall determine. Any deficiency which may exist on the technical school account shall be payable out of the school fund provided under the Education (Scotland) Acts, 1872 to 1883.

(2.) If the resolution is not confirmed as herein-after mentioned, it shall not be carried into effect, and shall not be again proposed until the expiration of not less than twelve months.

Provision for confirmation of resolution with reference to establishment of school.

4. A resolution of a school board, as in the last section mentioned, shall be of no effect unless and until—

(1.) It is confirmed at a subsequent meeting of the school board held after the resolution has been published in the prescribed manner, and after the expiration of the prescribed time, being not earlier than one month after the first publication of such resolution; and

(2.) It is confirmed by the Scotch Education Department by a Minute or Order.

Conditions under which schools are to be conducted.

5.—(1.) Every school provided under this Act if it claim a grant from the Department of Science and Art shall, with respect to any subject for which such grant is claimed, be conducted in accordance with the conditions specified in the Minutes of the Department of Science and Art in force for the time being, and required to be fulfilled by such a school in order to obtain a grant from that Department.

(2.) Those conditions shall, amongst other things, provide that a grant shall not be made by the Department of Science and Art in respect of a scholar admitted to the school unless or until he has obtained such a certificate from the Scotch Education Department, as is herein-after mentioned.

(3.) A Minute of the Department of Science and Art not in force at the passing of this Act shall not be deemed to be in force for the purposes of this Act until it has lain for not less than one month during one session on the Table of both Houses of Parliament.

School for subjects other than those for which grant is claimed to be conducted under Scotch Code.

6. Every school provided under this Act shall, in respect to all subjects other than those for which a grant is claimed from the Science and Art Department, be conducted in accordance with the conditions which may from time to time be set forth in the Scotch Education Code annually laid before Parliament under the heading "Technical Schools."

Duties and powers of school board with respect to technical schools.

7.—(1.) Every school board providing a technical school shall, subject to the provisions of this Act, maintain and keep efficient the school so provided.

(2.) For the purpose of providing any such school, a school board shall have the same powers, but subject to the same conditions, as a school board has for providing sufficient school accommodation for its district.

(3.) For the purpose of maintaining any such school, a school board shall have the same powers, but subject to the same conditions, as a school board has in regard to the maintenance of a higher class public school under section eighteen of the Education (Scotland) Act, 1878.

(4.) A school board may, with the consent of the Scotch Education Department, use for the purposes of a technical school any buildings, or part of any buildings, vested therein for the purposes of the Education (Scotland) Acts, 1872 to 1883, and a school board or combination of school boards may, with the consent of the Scotch Education Department, use for the purposes of the Education (Scotland) Acts, 1872 to 1883, any buildings, or part of any buildings, authorised by this Act.

(5.) A school board may, with the consent of the Scotch Education Department, spread the payment of the expense of providing a technical school over a number of years, not exceeding thirty-five years, unless with the sanction of the Treasury, and in any case not exceeding fifty, and may borrow money for that purpose; and for the purpose of such borrowing, section forty-five of the Education (Scotland) Act, 1872, shall be held to apply to the loan, and such provision shall be deemed to be a work for which a school board is authorised to borrow, and the Public Works Loan Commissioners are authorised to lend, within the meaning of the ninth section and the First Schedule of the Public Works Loans Act, 1875.

(6.) Where a school board has provided any such school, it may discontinue the school or change the site thereof, if it satisfies the Scotch Education Department that the school to be discontinued is unnecessary, or that the change of site is expedient.

Combination of school boards to provide technical school.

8. Any two or more school boards may resolve to combine together for the purpose of providing and maintaining a technical school under this Act common to the districts of such school boards, provided that no such resolution shall have any effect unless and until it has been published and confirmed in manner herein-before provided; and if such resolution is confirmed as aforesaid, the same provisions shall have effect as in the case of a resolution to provide a technical school, and if the resolution is carried into effect the expenses of providing or maintaining the school, and the sum necessary to meet any deficiency on the technical school account, shall be paid out of the school funds of the combining school boards in terms of the said resolution.

Transference of existing technical schools, &c.

9. The provisions of sections thirty-eight and thirty-nine of the Education (Scotland) Act, 1872, with respect to the transference of schools in pursuance of those sections, shall apply to technical schools now existing, or which may hereafter exist, in the same manner as they now apply to the schools which may presently be transferred in pursuance of those sections.

Scholars admissible to technical schools.

10. No scholar shall be admitted to a technical school unless or until he has obtained a certificate under section seventy-three of the Education (Scotland) Act, 1872, as amended by section seven of the Education (Scotland) Act, 1883, or an examination equivalent thereto.

Technical schools deemed public. Effect of attendance.

11. A technical school provided and maintained under this Act shall be deemed to be a public school, but attendance thereat shall not be reckoned as attendance for the purpose of any grant from moneys voted by Parliament under the Education (Scotland) Acts, 1872 to 1883.

A.D. 1887.

Definitions.

12. In this Act—

The expression "technical school" means a school or department of a school in which technical instruction is given, and school board shall include combination of school boards.

The expression "technical instruction" means instruction in subjects approved by the Scotch Education Department, and in the branches of Science and Art with respect to which grants are for the time being made by the Department of Science and Art, or in any other subject which may for the time being be sanctioned by that Department.

The expression "prescribed" means prescribed by the Scotch Education Department.

TECHNICAL INSTRUCTION AMENDMENT (SCOTLAND) ACT, 1892.

A.D. 1892.

An Act to explain and amend the Local Taxation (Customs and Excise) Act, 1890, with respect to Contributions for Technical Instruction in Scotland. [28th June, 1892.

BE it enacted by the Queen's most Excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, as follows:

Powers of local authority as to contribution for technical instruction, 53 & 54 Vict. c. 60. s. 2.

1. A local authority making contributions for the purposes of technical education in Scotland under the provisions of section two of the Local Taxation (Customs and Excise) Act, 1890, may do so in any one or more of the following ways; that is to say:—

Application of contributions by local authority.

(*a.*) In making provision in aid of technical or manual instruction supplied in schools or institutions within or without its district, provided that if the schools and institutions so aided be without the district they shall be accessible and convenient to the inhabitants of the district:

(*b.*) In providing, or assisting in providing, scholarships, or bursaries for, or in paying, or assisting in paying, the fees of students ordinarily resident in the district of the local authority at schools or institutions whether within or without that district:

(*c.*) In providing, or assisting in providing, school-books and apparatus, and salaries for teachers of technical and manual instruction, either within the district or accessible to the inhabitants thereof:

(*d.*) In founding, or assisting in founding, new institutions for technical and manual instruction:

(*e.*) In making contributions to the governing bodies or managers of schools or institutions within the district of the local authority for the promotion of technical education, or technical and manual instruction, under the Technical Schools (Scotland) Act, 1887, or this Act, subject to such terms or conditions as may be agreed upon between the local authority and any such governing body or managers: Provided always that no money so contributed shall be paid in respect of any scholar in a public or state-aided school who has not obtained a certificate under section seventy-three of the Education (Scotland) Act, 1872, as amended by section seven of the Education (Scotland) Act, 1883.

50 & 51 Vict. c. 64.

35 & 36 Vict. c. 62.

46 & 47 Vict. c. 56.

Schools, &c. to which contributions may be made

2. The schools and institutions to which contributions may be made by a local authority under this Act shall include schools and institutions under the management of—

i. A school board; or

ii. A governing body constituted under a scheme approved under the Educational Endowments (Scotland) Act, 1882; or

45 & 46 Vict c. 59,

iii. Any governing body or managers approved of by the Scotch Education Department.

Application of balances.

3. Any moneys directed by resolution of a local authority to be appropriated for the purposes of technical or manual instruction shall, although not expended or specifically allotted in whole or in part before the end of the financial year, remain applicable for such purposes, subject to the orders of the local authority.

4. In this Act—

Interpretation of terms.

The expression "local authority" includes the county councils of counties and town councils acting as such or as police commissioners of burghs, and police commissioners of police burghs in Scotland:

A.D. 1892.

The expression "technical instruction" means instruction in the principles of science and art applicable to industries, and in the application of special branches of science and art to specific industries or employments. It shall not include teaching the practice of any trade, or industry, or employment, but, save as aforesaid, shall include instruction in the branches of science and art with respect to which grants are for the time being made by the Department of Science and Art, and any other form of instruction (including modern languages and commercial and agricultural subjects) which may for the time being be sanctioned by that department, or by the Scotch Education Department, by a minute laid before Parliament, and made on the representation of a local authority that such a form of instruction is required by the circumstances of its district:

The expression "manual instruction" shall mean instruction in the use of tools, processes of agriculture, and modelling in clay, wood, or other material.

Saving.

5. Nothing contained in this Act shall prejudice or abridge the powers conferred on local authorities by the Technical Schools (Scotland) Act, 1887, or by the Local Taxation (Customs and Excise) Act, 1890.

Short title.

6. This Act may be cited as the Technical Instruction Amendment (Scotland) Act, 1892.

APPENDIX.

PART II.

PLANS, FITTINGS, SPECIFICATIONS, &c.

I.—CHEMICAL LABORATORIES.

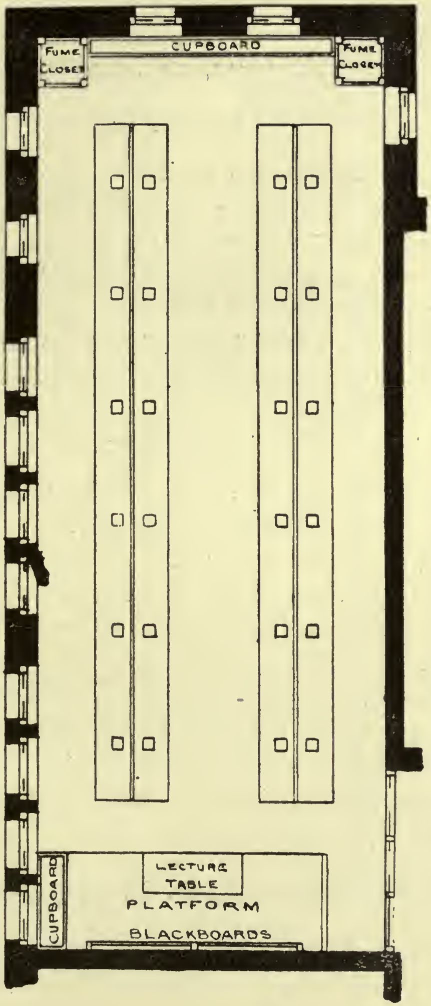
II.—COOKERY ROOMS.

III.—LAUNDRIES.

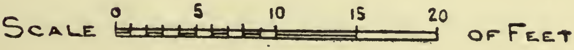
IV.—MANUAL INSTRUCTION ROOMS.

LABORATORIES—PRACTICAL CHEMISTRY.

The following is the ground plan of a Chemical Laboratory for forty-eight pupils :—


FUME CLOSET
CUPBOARD
FUME CLOSET
LECTURE TABLE
PLATFORM
BLACKBOARDS
CUPBOARD

PLAN OF LABORATORY


SCALE
0
5
10
15
20
OF FEET

CHEMICAL LABORATORY.

BENCHES, &C.

On the opposite page are given drawings of a section and elevation of Benches. The section shows the internal drainage of the benches, by which fluids are conveyed from the basins to the **V** shaped trough running through entire length of bench, the trough being made of wood lined with lead.

The following is a brief Specification of the benches and fittings for a Laboratory to accommodate forty-eight pupils :—

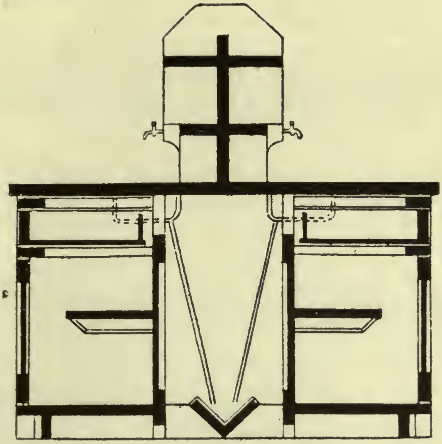
SPECIFICATION.

Two Laboratory Benches, each 42ft. by 4ft. 6in., as per detail. All exposed timber to be selected pitch-pine, three times varnished ; all inside woodwork to be spruce. The benches to be fully fitted with gas and water, brass hinges and locks to cupboards and drawers, and brass drawer pulls, Doulton's earthenware bowls, and to include all drainage.

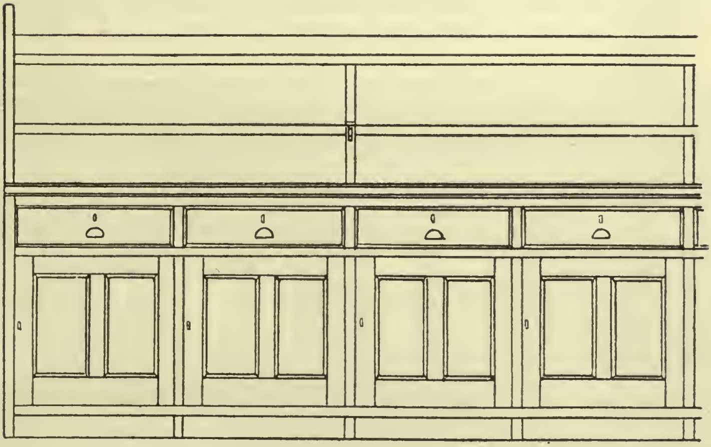
Fume Closets, with pitch-pine framing, sliding sashes, three times varnished, and fitted with gas and water and galvanised fume pipe complete.

One range of Shelves fixed between fume closets, as per drawing, pitch-pine, and varnished.

Estimated cost £160, or £3 6s. 8d. per pupil accommodated.



SECTION THROUGH BENCH

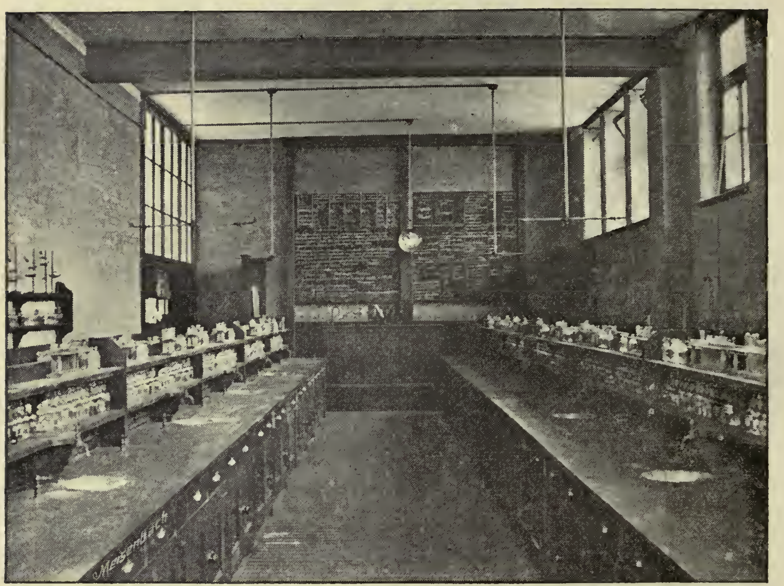


ELEVATION OF BENCH

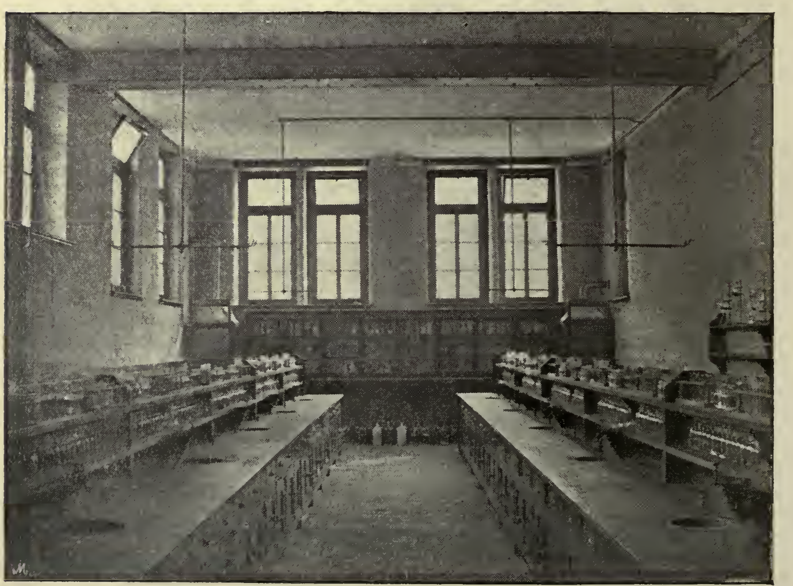
SCALE
0
1
2
3
4
OF FEET

CHEMICAL LABORATORY.

In order to further illustrate the arrangement of the Laboratory I append two views of the interior, one from each end. The height of the room should be at least fifteen feet clear.



Interior of Chemical Laboratory, Showing Teacher's Table and Blackboard at End.



Interior of Chemical Laboratory, Showing Cupboards, &c., at End of Room Opposite to the Teacher's Table.

COOKERY ROOMS AND FURNITURE, &c.

The following plan shows arrangement of a room for practical cookery :—

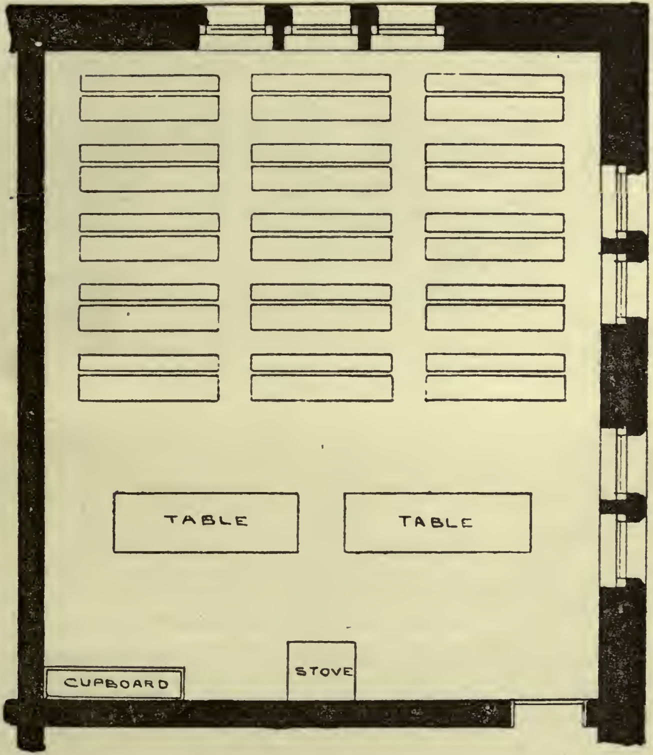


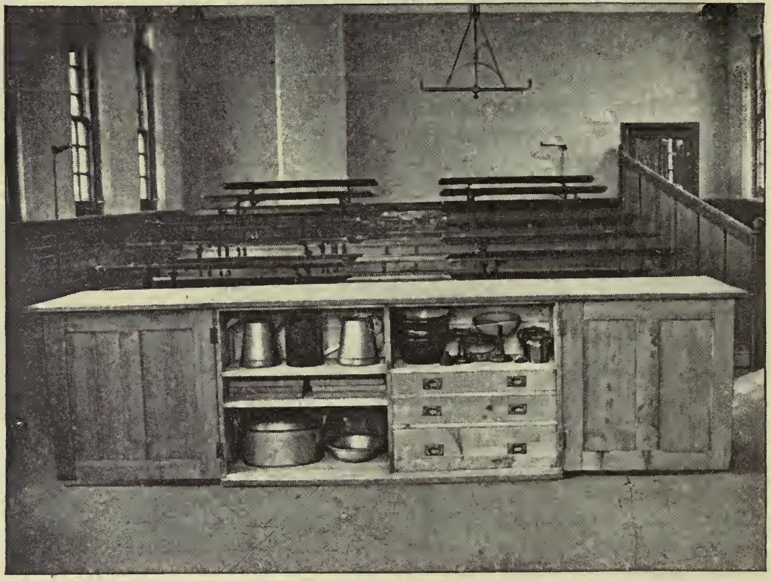
TABLE
TABLE
STOVE
CUPBOARD
SCALE
0
5
10
OF FEET

PLAN OF COOKERY ROOM

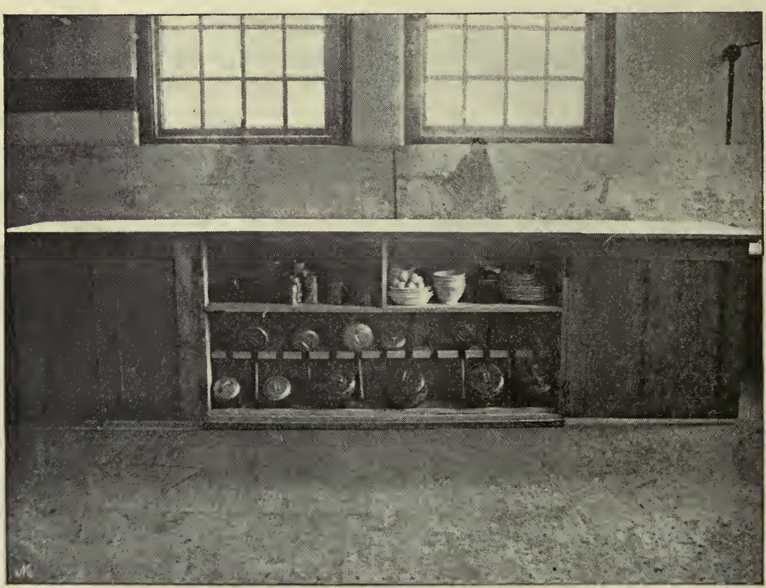
COOKERY ROOMS, FITTINGS, &c.

The following are front and back views of the cookery chest referred to on page 25 of Manual.

The chest is shown open, ready for use as a table :—



Cookery Chest—Front View.

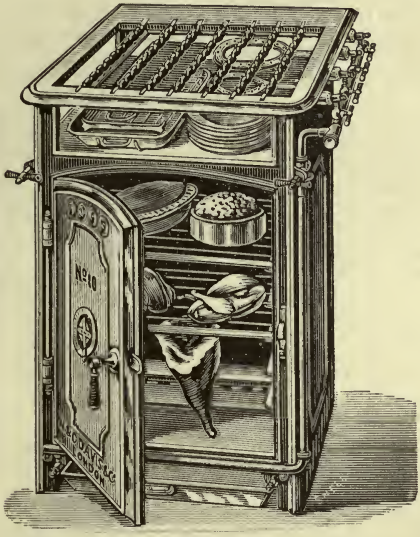


Cookery Chest—Back View.

COOKERY ROOMS.—FITTINGS, &c.

GAS STOVES.

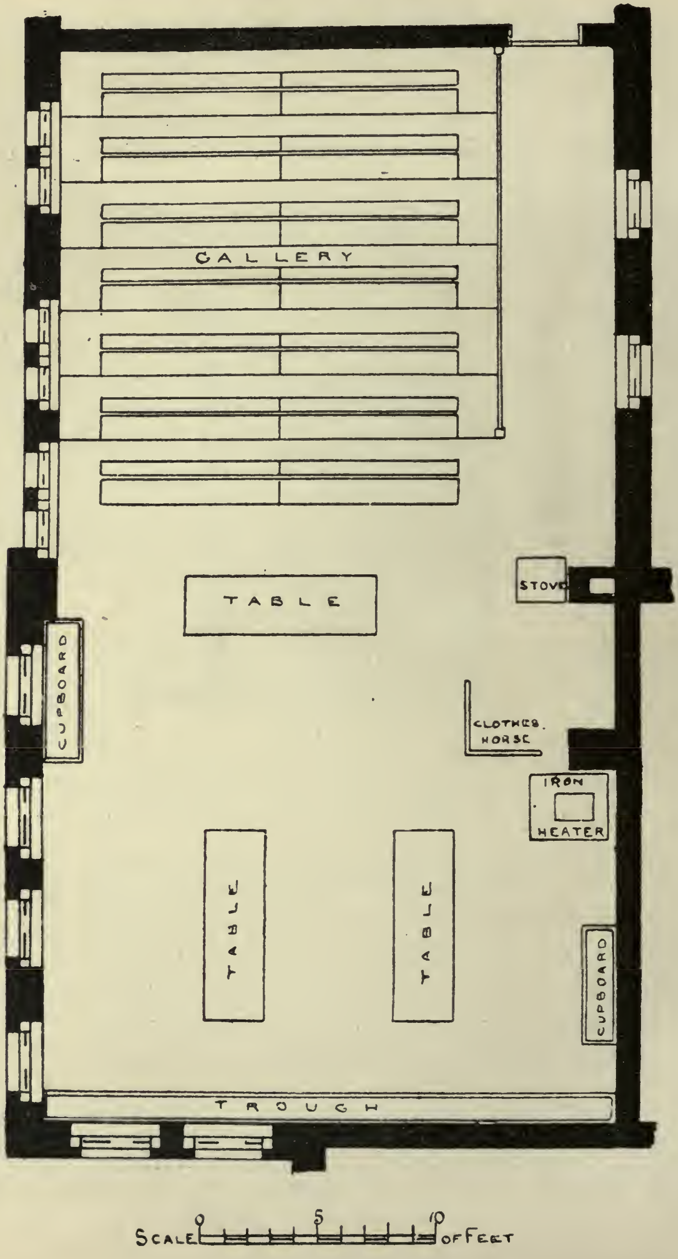
The following illustration shows a No. 10 Davis Gas Cooker :—



If permanently fixed, the stove should stand on a stone flag on the schoolroom floor, but it will be found convenient to have the stove moveable, and it may then conveniently stand on small wooden platform with rollers underneath. The platform should be cased on upper side with sheet iron. An iron gas pipe should connect stove with gas main, the pipe to pass through a small trap door in floor of room. India-rubber pipe connections are objectionable and dangerous. Cost of stove, £7 15s. 6d. ; or it may generally be hired from gas committee for a few shillings per quarter

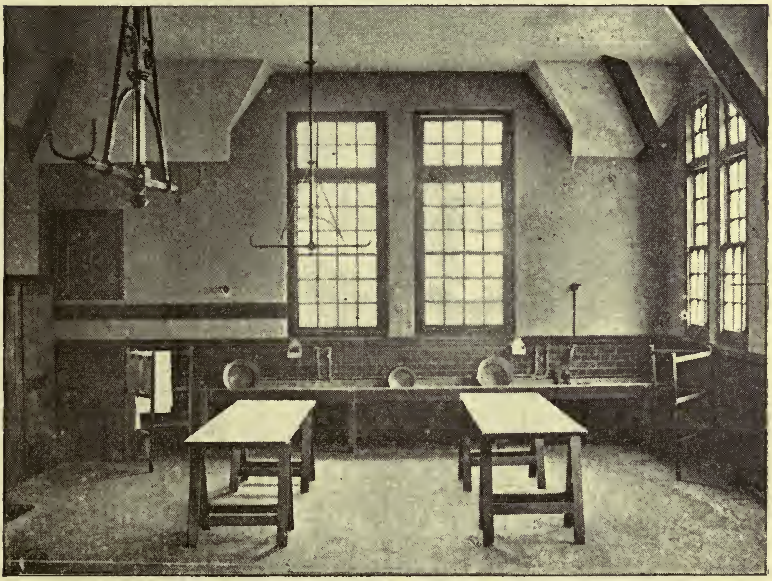
LAUNDRIES.

The appended plan shows a room arranged for laundry work. The same room may also easily be utilised for Cookery.


GALLERY
TABLE
STOVE
CUPBOARD
CLOTHES HORSE
IRON HEATER
TABLE
TABLE
CUPBOARD
TROUGH
SCALE 0 5 10 OF FEET

LAUNDRIES.

The next illustration shows a portion of the interior of a School Laundry, and gives the zinc-lined trough at end used for holding the bowls used for washing.

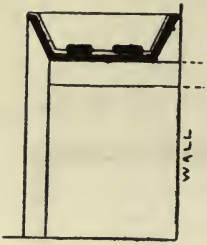


INTERIOR OF LAUNDRY.

It may very often be necessary to convert a room in the basement of a school to serve the purposes of a laundry. On the next page I give an illustration of a room obtained by the conversion of a portion of basement covered playground. A section of the trough, already referred to, is added.

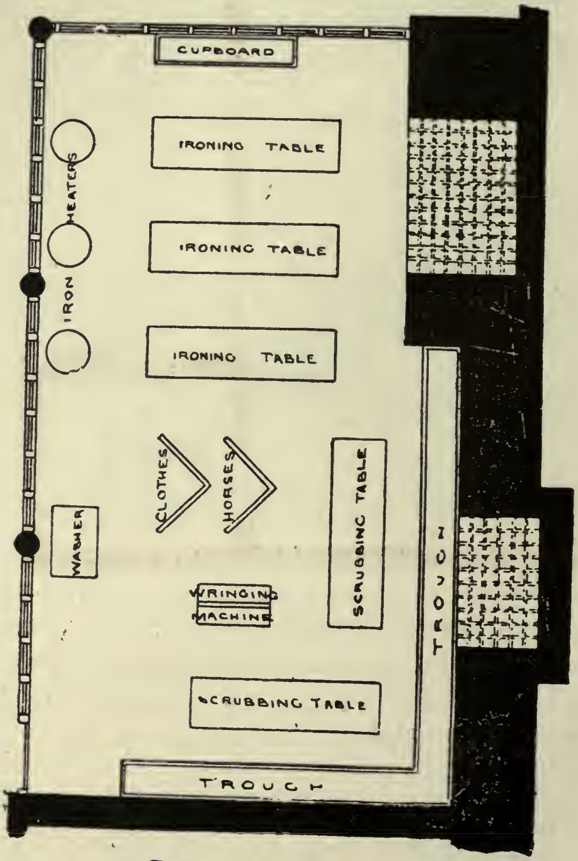
LAUNDRIES.

SHOWING LAUNDRY IN BASEMENT OF A SCHOOL.



SECTION THROUGH TROUGH

SCALE 0 1 2 3 OF FEET


CUPBOARD
IRONING TABLE
IRONING TABLE
IRONING TABLE
IRON HEATERS
CLOTHES HORSES
SCRUBBING TABLE
WASHER
WRINGING MACHINE
TROUGH
SCRUBBING TABLE
TROUGH

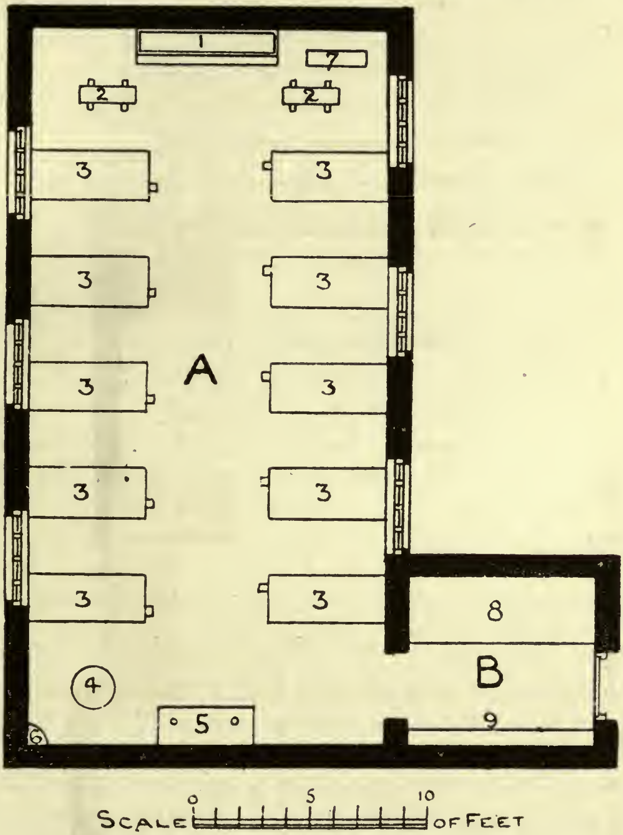
PLAN OF LAUNDRY

Scale 0 5 10 of Feet

MANUAL INSTRUCTION ROOMS.

WOODWORK.

The following is a conveniently-arranged room for ten pupils. Larger rooms, which may be more economically worked, can be arranged on the same lines :—



Manual Training Room for Ten Pupils.

Explanation of Fittings and Arrangement of Room, &c.—**A.** Manual training room. **B.** Lobby. Numbers on Plan relating to following :—

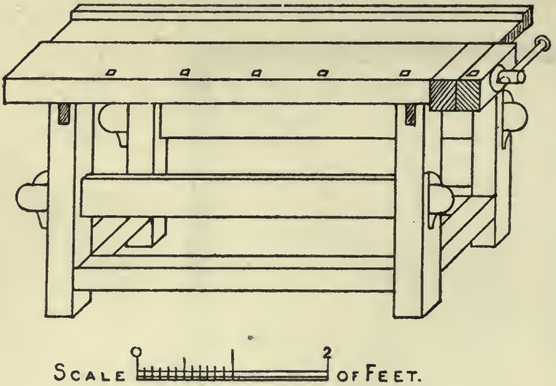
A.—1. Cupboard for tools with drawers underneath. 2. Saw benches ; two in number. 3. Benches for pupils. 4. Chopping block. 5. Boring bench. 6. Glue pot. 7. Grindstone. **B**—8. Wood store. 9. Cap rack.

Size of room **A**—30ft. by 15ft. Scale, ¼in, to 1ft.

MANUAL INSTRUCTION ROOM.

BENCHES, &c.

The following is a sketch of serviceable bench :—



SPECIFICATION OF BENCH AS PER SKETCH.

Dimensions—5ft. × 2ft. 7in. × 2ft.

Top :—To be of American birch, 5ft. long, 11in. wide, and 3in. thick, clamped at vice end with a piece of birch 3½in. × 2¾in. This piece to form fixed jaw of bench vice, and to be mortised and tenoned to the top. The sliding jaw of vice to be of same thickness and material, and to be provided with a German bench screw running between two sliding birch bars, and grooved into the underside of the bench top. The nut of bench screw to be let into the bench top and fixed.

The "well board" to be ¾in. white deal, rebated to underside of bench top, and made up at back with a piece of 2¼in. × 1½in. deal, running full length of bench and nailed to "well board."

Framing :—To be of white deal, 3in. square, mortised and tenoned together, provided with a 7in. × 1¼in. stretcher bar, shouldered top and bottom, and projecting 4in. through legs. The projection to be fitted with a birch tightening wedge as shown. Top to be bolted to framing with dog bolts.

The cost of such a Bench will be from £1 16s. to £2 each, according to quantity ordered at one time.

For list of tools and requisite timber required, see pp. 147-8 of Manual.

APPENDIX.

PART III.

"EVENING SCHOOLS." A paper read at The School Board Clerks Conference, held at Liverpool, 12th June, 1889.

"SCHOOL BOARDS AND TECHNICAL INSTRUCTION." A paper read at The School Board Clerks Conference, held at Huddersfield, May 20th, 1891.

EVENING SCHOOLS.

A Paper Read at the School Board Clerks' Conference, Liverpool, 12th June, 1889.

Mr. C. H. Wyatt (Manchester) read the following paper:—I propose to lay before you certain conclusions relative to the conduct of evening schools by School Boards, based principally upon my own experience in the work in the district of the Manchester School Board. I will divide my subject broadly under three heads:—

1st. The elementary evening school, and how best to extend its work under present conditions, with a few suggestions relative to the removal of difficulties under which this class of school at present labours, and a few comments upon the scheme embodied in "The Elementary Continuation Schools Bill" now before the House of Commons.

2nd. Evening classes where subjects of a more advanced character are taught. I refer to science and art classes, and classes in such subjects as modern languages, with those which come under the name of commercial education.

3rd. I propose to show how the classes for more advanced subjects may be grafted upon the ordinary elementary evening school.

(1) We all know that for some years the numbers in attendance at the ordinary elementary evening schools have been on a decline. I find on reference to figures appertaining to our own elementary evening schools in Manchester, and taking the first four weeks in the session, that from 1878, when there were 2,158 pupils in average attendance, there was a steady decline down to 1886, when the number was 1,011. Our experience in Manchester is the experience of the country, for I find, from the annual report of the Committee of Council on Education, that whilst in 1878 there were 48,669 students examined in the night schools, in 1885 this number had decreased to 21,989. During the last two years there appears to have been a slightly better attendance; for I see by the report of the Education Department for the year ended the 31st of August, 1888, that last year there were examined 27,336 pupils. Turning again to Manchester I wish to draw attention to the fact that our figures since 1886

have shown considerable increase. As already stated, the average attendance for the first four weeks of the session of 1886 was 1,011, in 1887 it was 1,599, and in 1888 it was 3,834. Of course if we take the average attendance for the whole of the session, extending over about six months, the figures will not be so high as those for the first four weeks of the period. For the purpose of comparison I will take the average attendance at the Manchester Elementary Board Evening Schools for the whole of each session. The figures are as follows:—1886-7, 22 departments, 650 total average; 1887-8, 16 departments, 1098, total average; 1888-9, 29 departments, 2,797 total average. From these figures it will be seen that in two years our average attendance has increased more than four-fold, whilst the number of departments has only increased by 7 (22 to 29). Whilst the average attendance has thus largely increased, the cost to the rates has remained about the same. The percentage of passes in the three R's has been:—

	Reading.	Writing.	Arithmetic.
1886-7	98	80	55
1887-8	98	83	61
1888-9	98	90	67·3

and the amount of grant earned per head has been—1886-7, 9s. 7¾d.; 1887-8, 11s. 6d.; 1888-9, 12s. 6d. The total amount of grant earned in each of the three years was—1886-7, £248; 1887-8, £563 8s. (including drawing grant); 1888-9, £1,558 (including drawing grant). I think everyone will admit that these figures are in every way satisfactory, particularly when it is borne in mind that the gross expenditure upon our night schools has been altogether upon a more liberal scale than it was formerly. We have paid our teachers better, we have equipped the classes with better books and apparatus, and the evening schools altogether have been managed in a generous way. The results I quote show that this generosity has entailed no increased cost to the Manchester ratepayers, whilst the nett cost to the rates is only a quarter of what it was two years ago. I propose to explain to you briefly the way in which we have brought about this result. In addition to the ordinary Code subjects, we took advantage of the facilities offered by the Science and Art Department for the teaching of drawing to the pupils in attendance at elementary evening schools; and although the grant earned by the drawing was not very large (last year 942 pupils earned

£94 4s. for the whole of our twenty-nine departments), yet the subject itself no doubt proved a very great attraction. The teaching of drawing was confined to the boys; for the girls we took up cookery. The fact that 625 girls qualified for payment proves that they went into the study of the subject with some earnestness, so far as earnestness can be gauged by regular attendance at the classes, for in this subject there is no examination. Last session we also added shorthand for the boys (for this of course we got no grant);* and for the elder girls and young women we took up the practical teaching of dressmaking and cutting out. I have a very strong feeling that all pupils in attendance at elementary night schools, particularly in the manufacturing districts, are exceedingly ready to find out any instruction which is not of the soundest and most practical description, and consequently when we took up the teaching of dressmaking we went to several of the leading dressmaking establishments in the city and engaged for our instructors practical dressmakers in the employ of those firms. Although these instructors were hardly as well able to manage classes as ordinary teachers, yet there is no doubt that their thorough practical knowledge of the subject largely compensated for any want of previous experience in teaching. The progress that many girls made in the making of dresses was truly marvellous. I should not have believed it possible had I not, at the end of the session, seen the dresses made in the various classes. Of course I should remark that with regard to this subject our object was not to teach the girls to be dressmakers in the ordinary sense of the word, but rather to put into their hands the power of making garments for themselves—no mean accomplishment, when, for the want of it, I have known a servant to spend 8s. for the material for a dress, and pay in addition 12s. for the making of it. Adverting again to the subject of cookery, I would remark that in like manner we tried to make the teaching of the subject of a thoroughly practical character; adapting our teaching to the sort of homes that the pupils come from, and in the majority of cases likely always to belong to. The utensils used were of the plainest possible description, and such as are found in an ordinary working man's house. The total equipment of one of our cookery classes in utensils cost something under £5, excepting, of course, a cookery stove which we hired from the Gas Committee of the Corporation, and a cupboard in which the utensils are stored. Such, briefly, was our course of instruction. We carefully selected our principal teachers, and we paid them adequately. In addition to the ordinary remuneration, we paid our principal teachers a bonus of 1s. for every pupil in attendance (average) above fifty, the average attendance of course being taken for the whole of the session. The classes were constantly supervised, and I firmly believe that this is a most essential point with regard to night school management. Of course the attendance at these elementary night schools is always better at the commencement of the session than it is towards the end. Knowing from experience how great a tendency there is for the numbers to fall after the Christmas holidays, the Manchester School Board inaugurated a number of tea parties for their elementary evening schools. We had no power, of course, to pay for these parties out of the rates; consequently we fixed a price for admission, namely, 4d., making a slight addition in the case of friends whom the pupils might like to bring with them. Over 4,000 pupils paid for admission. The expenses were amply covered by the sale of tickets, and I have not the slightest doubt that these gatherings have had a capital effect in keeping up our average attendance. Later on towards the end of the session we made arrangements by which, on a given night, samples of the prizes that we proposed to give should be on view at each night school, and I find on reference to my figures that the night on which these samples were exhibited the attendance went up something like 500, the custom having been in previous years not to give the pupils the choice of their prizes. We also gave certificates to the girls for attending the classes in cookery, and certificates were given to the boys for passing in drawing. Such were the means by which we improved our night schools last session in Manchester. In the case of many students we could better secure their attendance at the elementary evening schools if they were not rigidly obliged to be instructed in the three R's.* If we had the choice of subjects, and if the Government would divide the grant amongst those subjects, I have not the slightest doubt but that it would be largely for the benefit of the elementary evening schools. I do not see, either, why they should refuse to give us grants for pupils over twenty-one years of age. I believe it is the experience of those who have had the management of Sunday schools that those Sunday schools are most successful where there are good adult classes. Young people are largely imitative. We find that the leader of a party of youths can easily affect the attendance of a particular evening school to the extent of twenty or thirty pupils if he desires to do so, and there is no doubt that pupils of thirteen, fourteen, or fifteen will be largely attracted to elementary evening schools if they know that they are attended by those of a more mature age. Consequently we have done in Manchester all that we possibly could to encourage the attendance of adults, and although of course we do not receive grants for them, yet I do not think that we have suffered on the whole through our generosity. It seems an absurd rule of the Science and Art Department that they refuse to give the very meagre grant for drawing (2s. per pupil who passes) if that pupil is unable, no matter the cause, to attend subsequently the examination of H.M. Inspector in the three R's. This rule seems to be exceedingly absurd when we have been told what an important part drawing plays in forming the basis of nearly all technical instruction. It appears almost a grotesque rule when we remember that if the very same pupil, instead of attending an elementary evening school and being satisfactorily taught in the elements of drawing, were to attend a class in science, he would be able to earn from the very same source £2 or more, whilst the Department absolutely refuses to pay the very small grant of 2s. if he is more modest in his demands, and joins what will probably be of more practical use to him, namely, an elementary evening school.

---

* A Grant may now be earned for Shorthand.

---

* This change has now been made in the Code.

Without enlarging upon the vexed question of the compulsory attendance of young people at elementary evening schools, I should like briefly to refer to one of the difficulties which presents itself to me relative to the practical working out of any such an enactment, should it ever become law. We know the difficulties encountered by School Boards in carrying out compulsory attendance at school in the case of children of school age; we know how tenderly the powers have to be applied, and the great care which has constantly to be exercised lest anything like hardship should be experienced by the deserving poor. In the case of a youth over school age, free from the restraints of a day school, and unwilling to attend an evening school, it appears to me that there would be an insuperable difficulty in fining, say, the widowed mother of such a boy. I cannot see how the law could hold the parent responsible in such a case, and I am afraid that the working of such a law would be impossible. On this account I am glad to see that in "The Elementary Schools Continuation Bill," introduced into the House of Commons by Mr. Samuel Smith, in March of this year (1889), it is not proposed to make attendance at continuation schools compulsory, save in the case of children who "not having passed the exemption standard, elect to continue their education in a continuation school instead of a day school." It is proposed that "such children shall remain in the continuation school till they have passed the exemption standard or reached the age of fifteen." I think that for a commencement the age of fifteen is too high; fourteen is the utmost limit of school attendance, and I think this is quite sufficient. I believe the Bill might be improved in other directions. For instance, a child under thirteen who passes the total exemption standard of the district in which he resides, yet cannot by this Bill wholly leave school, might, I think, at the option of his parents, attend one of these continuation schools, and so be able, if necessary, to be beneficially employed during the day time until he reaches the age of thirteen. It appears also that no provision is made in the Bill for the payment of grants by the Education Department in respect of scholars at a continuation school other than children. This appears to me to be a serious flaw. I think that if these continuation schools are to be a success the Education Department should make grants in respect of all who attend them. I do not see, either, why the number of subjects of instruction or the selection of subjects should be fixed on any hard and fast line. I would much prefer that all reference to these subjects should be omitted in the Bill, and that power should be given to the Department to vary these subjects from time to time as may be found desirable. It appears to me that the framers of the Bill are simply repeating the mistake of the Code in regard to the subjects taught in elementary evening schools. Ample power should be given to adapt the evening schools to the wants of localities.

(2.) During the past session (1888-9), we had evening science and art, language, and special classes. The following return shows the subjects that were taken and the number that attended the classes:—

Science.—Biology, 8; botany, 21; building construction, 41; chemistry, practical and inorganic, 135; chemistry, theoretical inorganic, 165; chemistry, practical organic, 36; chemistry, theoretical organic, 41; geology, 12; geometry, 117; hygiene, 60; machine construction, 242; magnetism and electricity, 160; mathematics, 346; mechanics, applied, 65; mechanics, theoretical, 22; physiography, 121; physiology, 155; sound, light and heat, 82; steam, 31; mechanical engineering, 10. Total, 1,870.

Art Classes.—Freehand, model, perspective, &c., 928.

Language and other Classes.—Language, 629; book-keeping, 214; shorthand, 395; writing, 109; singing, 355; practical joinery, 38; arithmetic and English, 96. Total, 1,836. Grand total, 4,634.*

In addition to the foregoing, the Board conducted elementary evening classes under the Code, and about 6,000 students entered at these classes, so that during the past winter the experience of the Board has been that in their evening classes they have had over 10,000 students, made up as follows:—Science, 1,870; art, 928; language and other classes, 1,836; elementary evening schools, 6,000; total, 10,634.† Owing to the fact that School Boards are not allowed to spend any portion of the rates on the maintenance of evening classes other than the evening classes conducted under the Code, the Manchester School Board are under the necessity of showing the Government auditor, each session, that their evening science and art and language classes are self-supporting.§ The income is derived from two sources, namely:—(1) Science and Art grants received from South Kensington, and (2) fees of pupils. Last session there was a balance to the credit of the Board, after paying all expenses, of £86 4s. 1d. When organising the work for last winter the Board decided to largely increase the fee to be paid by students, and although these fees are not much in amount, yet when there is borne in mind the class of pupil for whom the instruction is given, there is no doubt that the fees are as large in amount as could be very well charged; and in some subjects, such as practical chemistry, where the Board are obliged to charge a fee for the session of 9s., will no doubt be prohibitive to many students belonging to the working classes. If it were not for the very good teachers whose services the Board have been able to secure, the remarkable success of the students in passing the examination conducted by the Science and Art Department, and the consequently large grants earned by these science and art classes (last year the grant was over £1,700), it would be practically impossible for the Board to carry on this branch of their work. The fact that the Board is the centre of a very large industrial population also makes it possible for them to conduct these classes on a scale totally impossible for a School Board of a smaller district. For the reason given already, that these science and art and special classes must be self-supporting, it naturally follows that they can only be established where they will be attended by pupils who will be able to pay the fees, and there are many portions of Manchester where it would be impossible to establish any such classes. Time after time the Board have tried in poorer localities to carry on the work, but owing to the Board's inability to subsidise the classes they have not succeeded. The Board have over fifty school buildings, and there is no reason why every one of these buildings should not be a centre for evening school work, not only of the ordinary elementary kind, but in class rooms and other rooms specially built for the purpose there might be established science, &c., classes, and classes in 2nd and 3rd grade art. Owing to the strict economy which has to be practised many of the classes are very inadequately supplied with the necessary apparatus, and although the Science and Art Department give liberal grants to classes for the purchase of apparatus, yet the Board can only afford to spend a minimum amount in this direction. Science and art classes ought to have properly equipped rooms. Many of our art classes are greatly in want of casts, diagrams, drawing-boards, &c., which are absolutely necessary for the efficient carrying on of the classes; and when we come to the more expensive kinds of science instruction, such as practical chemistry, it is totally impossible to supply the town adequately with chemical laboratories, owing to the expense. We want legislation to enable us to conduct such classes and charge the balance of the necessary cost to the rates. Sir Henry Roscoe's Technical Instruction Bill would do this if it became law.*

---

* In 1891-2, the numbers were—Science, 2,491; Art, 2,375; Commercial Schools, 3,053; Grand total, 7,919.

† In 1891-2, the total of individuals was 15,894, making 31,102 entries.

§ This is not the case now (1892).

(3.) Adverting to the third division of my paper, what I should like to see, in connection with evening class work in our own district, is that there may be placed, in every Manchester Board School, centres for evening class work. I should like to see in each of these centres a properly organised evening school at work under the Code, and also classes in science and art conducted in the same premises, which can be supplied with pupils who have passed through the elementary evening school. I would so order the curriculum that elementary instruction should be given in those subjects which would afterwards be taken by pupils in connection with the Science and Art Department. All who have had the practical management of science and art classes complain that the pupils come to them very badly equipped for the work they are about to undertake, and in the opinion of those who are best able to judge it would certainly be the wisest policy to graft the science and art instruction upon the ordinary elementary evening schools; thus students having received all the instruction possible from an elementary night school might be passed on to science and art classes conducted in the same building, and this would be particularly useful in the case of art instruction. Owing to the syllabus provided by the Science and Art Department, in March, 1887, instruction in first grade art is thoroughly efficient in our day and elementary evening schools, but, as already pointed out, it is impossible for any student over twenty-one years of age and who does not consequently earn grant for reading, writing, and arithmetic, to earn the small grant which is given by the Science and Art Department for elementary evening instruction in art. Many of such students who, having gone through the course of standard instruction in elementary art, could attend classes in second and third grade art; but owing to the fees which have to be charged in order to make these classes just barely maintainable, at present it is impossible to carry on this work in the poorer portions of the district. In like manner for pupils whose tastes were for science, classes in those subjects should be open to them, and there should in addition, particularly in commercial centres, be conveniently appointed classes in one or more modern languages, book-keeping, &c., and instruction in the details of counting-house and office work. We all know how helpless the boy is who first enters an office. I have known boys who have been in attendance at middle-class schools who could not even write an ordinary business letter, and I see no reason why the technical details of office work should not be taught in evening classes covering commercial subjects. Although I would utilise the present School Board buildings, I would like, if possible,

---

* The Government passed the Technical Instruction Act in 1889 after this was written.

LIBRARY OF THE UNIVERSITY

to have attached to new schools special rooms for evening-class work. There should be a room for art instruction and a chemical laboratory, and I see no reason why there may not be a general meeting place which might be used as a reading or conversation room. We know that the Royal Commissioners were unanimously of opinion that insufficient encouragement had been given to evening classes, and we had hoped that in forming the New Code, this being one of the undisputed recommendations of the Royal Commission, it would receive adequate treatment. The population of Manchester, Salford, and district is 780,000. The number in attendance at the evening schools, embracing science and art, technical, commercial, and ordinary subjects, during the last winter was certainly not more than 15,000. The number of young persons between thirteen and eighteen years of age who will be represented in this population, may be taken at 10 per cent, which is 78,000. Surely with adequately equipped schools, conveniently situated and untrammelled and unembarrassed by Acts of Parliament and regulations of the Education Department, a large proportion of this 78,000 might be easily got into these evening schools. I sincerely hope that the time is shortly approaching when all possible difficulties will be removed, and we shall have an opportunity, at all events in our large centres of population, to conduct our evening schools efficiently and well.

SCHOOL BOARDS AND TECHNICAL INSTRUCTION.

A Paper read at the School Board Clerks' Conference, at Huddersfield, May 20th, 1891.

Mr. C. H. Wyatt (Manchester) read the following paper: The Technical Instruction Act, 1889, in districts where its provisions have been adopted by the local authority, makes it possible for the first time for School Boards in England and Wales to apply rate money to the maintenance of higher instruction in their day and evening schools. The question of technical instruction has of recent years greatly gained in importance, and through the influence of earnest friends of education the Act of 1889 was passed. To the same source we owe the fact that, through an unforeseen circumstance, it was possible last year for the newly-imposed duties on beer and spirits, estimated at 709,000*l* in England and 34,000*l* in Wales, to be placed at the disposal of County Councils. From what we know of the interest which has been taken in this question in the country it is certain that a very large proportion of these moneys will be applicable for the purposes of technical instruction, and of course it will be in addition to the money derivable from the rates which may be levied under the Technical Instruction Act. It is exceedingly satisfactory to find the public spirit which prevails upon this question. This is clearly shown by the large number of towns that have adopted the Act, and by the still larger number of local authorities who have resolved to devote the money coming to them under the Local Taxation Act entirely to the promotion of technical instruction. The London County Council appears to provide the exception which proves the rule. The following is a detailed summary of the progress up to April last:—

(*a*) Local authorities giving rate-aid to technical education under the Technical Instruction Acts:—

Aberystwyth
Alfreton
Atherton
Banbury
Barnsley
Guiseley
Halifax
Hindley
Horfield
Keighley
Rochdale
Rotherham
Salford
Sheffield
Sherborne

Bideford
Billinge
Bingley
Birkenhead
Birmingham
Blackburn
Blaenau Festiniog
Bolton
Bridgwater
Burnley
Burslem
Cardiff
Darwen
Derby
Eccles
Kidderminster
Longton
Ludlow
Macclesfield
Maidstone
Manchester
Middlesbrough
New Mills
Newport (Mon.)
Northampton
Northwich
Nottingham
Ossett
Oswestry
Oxford
Shipley
Southport
Stafford
Stalybridge
Stockport
Stone
Totnes
Wakefield
Warrington
Westmoreland (C.C.)
Widnes
Worcester
Wrexham
Yeovil
York

Total, 60.

(*b*) Table showing the mode of appropriation of the new fund under the Local Taxation Act (1890) by (i) English County Councils (except Monmouth) :—

[N.B.—The expression "All to Technical Education" is only inserted where the Technical Instruction Committee of the Council has definitely resolved to recommend such appropriation. In several other cases there is little or no doubt about the appropriation.]

Bedfordshire	All to Technical Education
Berkshire	All to Technical Education
Buckinghamshire	All to Technical Education
Cambridgeshire.........	All to Technical Education
Isle of Ely	Applications from Schools being received by a Committee
Chester (Co.)............	All to Technical Education
Cornwall	All to Technical Education
Cumberland	All to Technical Education
Derbyshire	Applications from Schools being received by a Committee
Devonshire...............	All to Technical Education
Dorsetshire	All to Technical Education
Durham (Co.)	All to Technical Education
Essex	All to Technical Education
Gloucestershire.........	Half to Technical Education
Herefordshire	£1,000 to Technical Education
Hertfordshire	All to Technical Education
Huntingdonshire	All to Technical Education
Kent	Applications from Schools being received by a Committee

Lancashire	All to Technical Education
Leicestershire	£300 to Technical Education
Lincolnshire :—	
Holland	All to Technical Education
Kesteven	All to Technical Education
Lindsey	Applications from Schools being received by a Committee
Middlesex	All to Rates for first year
London	£140,000 to Rates. Balance unappropriated. Recommendations of Committee rejected
Norfolk	All to Technical Education
Northamptonshire	Applications from Schools being considered by a Committee
Do. Peterbro' (Soke of)	All to Technical Education
Northumberland	All to Technical Education
Nottinghamshire	All to Technical Education
Oxfordshire	Half to Technical Education
Rutland	£100 to Technical Education
Salop	All to Technical Education
Somersetshire	All to Technical Education
Southampton (Co.)	Applications from Schools being considered by a Committee
Staffordshire	£7,000 to Technical Education
Suffolk (East)	All to Technical Education
„ (West)	All to Technical Education
Surrey	Applications being received from Schools by a Committee
Sussex (East)	Applications being received from Schools by a Committee
„ (West)	Applications being received from Schools by a Committee
Warwickshire	All to Technical Education
Westmoreland	£250 to Technical Education
Wiltshire	All to Technical Education
Worcestershire	All to Technical Education
Yorkshire (E.R.)	All to Technical Education
Ditto (N.R.)	£2,000 to Technical Education
Ditto (W.R.)	All to Technical Education

(ii.) Welsh County Councils (including Monmouth).

Anglesey	All to Intermediate and Technical Education
Breconshire	Half to Technical Education and half to General Purposes
Cardiganshire	All to Intermediate Education
Carmarthenshire	All to Technical Education
Carnarvonshire	All to Intermediate and Technical Education
Denbighshire	All to Intermediate Education

Flintshire	All to Intermediate and Technical Education
Glamorganshire	All to Intermediate and Technical Education
Merionethshire	All to Intermediate Education
Montgomeryshire	All to Intermediate and Technical Education
Radnorshire	Half to Intermediate and Technical Education
Pembrokeshire Monmouthshire	No information

Summary of English and Welsh County Councils.

Committees appropriating all to Technical Education	38	48
,, ,, part to Technical Education	10	
Other Committees receiving applications for Aid to Schools	9	9
All to Rates	1	2
Bulk to Rates (balance unappropriated)	1	
No information		2
Total		61

(*c*) County Boroughs appropriating all or part of the Fund to Technical Education.

Bath (all)
Birmingham (part)
Blackburn (all)
Bolton (all)
Brighton (all)
Burnley (all)
Bury (all)
Canterbury (all)
*Cardiff (all)
Coventry (all)
Croydon (all)
Derby (all)
Devonport (all)
Exeter (all)
Halifax (all)
Kingston-on-Hull (all)
Leeds (all)
Leicester (all)
Liverpool (all)
Middlesborough (part)
Newcastle-on-Tyne (all)
Oldham (all)
Plymouth (all)
Reading (all)
Sheffield (all)
Southampton (all)
Swansea (all)
West Bromwich (all)
Wigan (all)
Worcester (part)

Summary of English and Welsh County Boroughs.†

Committees appropriating all to Technical Education	26	30
,, ,, part to Technical Education	4	
Other Committees considering the question		7
No steps being taken, or No information		24
Total		61

---

* Part to Intermediate and part to Technical Education.

† Since this paper was read at Liverpool, many additional authorities have decided to promote Technical Instruction.

A useful supplementary Act on the subject of technical instruction (the credit of which I believe is due to Sir Henry Roscoe) has recently been sucessfully piloted through Parliament, and remedies one of the uncertainties of the Act of 1889 by making it clear that scholarships may be provided out of the funds available for technical instruction. School Boards occupy a recognised position under the Act of 1889 provided they are managers of schools receiving aid from the Science and Art Department, and are eligible for assistance by the Town Council or other local authority in the case of instruction in science and art and higher instruction given in the Boards Schools. Considerable uncertainty had previously existed as to the power of School Boards to spend money in aid of this instruction, whilst without science and art instruction it was not possible to have higher grade schools. In some districts the Local Government Board auditors have surcharged expenditure by School Boards; and although in many of our large towns these advanced schools have for many years done very useful and successful work, yet it was always a source of anxiety to cover the extra expenditure incurred, by grants from South Kensington, and by the fees of pupils. This was not only true of science and art instruction in the day schools, but also of schools and classes conducted by Boards in these and kindred technical subjects in the evening. So it came about that arrangements were made by which the teachers were paid out of the grants, and other expenditure had to be met by the fees paid for instruction. This was a most undesirable state of affairs, as it meant that successful classes could only be conducted in popular subjects where a large number of students could be obtained, and rendered impossible the carrying into the poorer districts of our large towns all kinds of instruction of a higher character in connection with our evening schools. Although the Technical Instruction Act of 1889 was not a perfect measure, yet there is no doubt that a great deal of practical good has resulted from it since it became law, and a good deal more can probably be accomplished by its assistance if local authorities will only adopt its provisions, and if School Boards will generally avail themselves of the opportunities afforded for the extension of technical instruction. The Act adopts the whole of the subjects of instruction embraced in the Directory of Science and Art Department, and upon a representation being made by a Town Council, or local authority, to the Science and Art Department, additional subjects may be included for assistance under the Act.

Several of these representations have already been made to the Department. The additional subjects include such important additions as modern languages, with commercial subjects generally and manual instruction.

I do not propose to speak at any length with regard to the application of the Technical Instruction Acts to the higher grade day schools, although there is no doubt that these Acts will make possible the establishment of such schools in towns where they have not previously existed. Where I think the particular value of the Technical Instruction Acts comes in is, that School Boards are now able to make adequate provision for evening instruction in a large number of subjects for which there is a most distinct need in the case of pupils who have not hitherto been able to avail themselves of opportunities that have been offered; and I think that this subject of technical instruction is particularly interesting to School Boards, because it will largely depend upon the supply of material received from the public elementary schools as to whether or not an adequate return will be made for the expenditure of the great sums of money now available for technical instruction. It seems to me of the highest importance that the School Boards of all our large towns should have properly organised evening schools. Without such a system of evening continuation schools our School Board work would appear to be lamentably imperfect. We have to thank Sir William Hart Dyke for the removal of some of the difficulties connected with our elementary evening schools. The provisions of the Code of 1890, so far as evening schools are concerned, were a move in the right direction, particularly in the removal of the restrictions in the case of pupils who have passed the 5th Standard. I refer to the absurd rule which formerly rendered it necessary for all pupils in evening schools to be presented over and over again in the dreary requirements of reading, writing, and arithmetic. One of the greatest disadvantages with which ordinary night schools have had to cope has been the fact that the pupils found that the work done in the night schools was a weary repetition of what they had previously experienced during their school life. Although the condition of evening schools has been considerably improved by the alterations in the Code, I think that the Education Department might still be bolder in their reforms, and what I should like to see would be that the requirements of the Code affecting evening schools may be entirely re-cast, and a greater amount of elasticity allowed in the management of these schools. I do not wish to be thought too revolutionary, but I think it would be to the advantage of evening schools if payments by results could be entirely abolished so far as they are concerned, and the grant, which I should like to see much more liberal, depend not on the individual passes at a hurried examination held at the fag end of the session, but upon H.M. Inspector being satisfied (*a*) that an adequate staff is employed, (*b*) that the school is properly supplied with books and apparatus, and (*c*) that the scheme of instruction set forth in the time-table is intelligible and suitable for the pupils concerned. We want greater freedom in the management of our evening schools. In a word, I would have no such examinations as we have now. I know how distasteful these examinations are to the pupils. I think that a far greater amount of good would be done by a series of visits paid by H.M. Inspector during the session than by the present mode of testing the educational attainments of the pupils. These visits would enable H.M. Inspectors to foster the best interests of the night schools by advice and counsel. I should like to acknowledge here the warm interest taken by H.M. Inspectors in the night schools in all parts of the country. I hope that the next Code will see some important changes in this direction. In connection with the administration of money under the Technical Instruction Act in evening schools I may, perhaps, best illustrate my views by a brief account of what we are attempting to do in Manchester. Last year the City Council gave to the School Board the sum of £1,000* under the Technical Instruction Act, and the assistance so given enabled the Board to geographically distribute their schools, and to a certain extent grade the subjects of instruction suitable to the needs of the working-class districts of the city. Apart from the eighty-four elementary evening schools conducted by the Board, which form admirable feeders to the evening schools of a higher grade for technical instruction, we have had in operation during the past session six evening schools for science and art, each with its head master, staff of teachers, suitably appointed rooms and chemical laboratory. Commercial instruction, which in large towns will always form an important branch of technical instruction, covering commercial handwriting, foreign languages, shorthand, book-keeping, typewriting, and commercial geography, has been provided at five schools. Thus the whole city has been practically covered by a network of evening schools, where the working-class pupils have the opportunity of receiving the instruction suitable to their various needs and necessities, and, thanks to the assistance received under the Technical Instruction Act, this instruction has been given at low fees, which have been within the reach of all. The following summary will convey some idea of the progress which has been made by the Board's evening schools in Manchester during the past session compared with the previous session :—

---

* In 1891 the amount was increased to £3,600.

SCIENCE AND ART SUBJECTS.

	No. of Entries.	
	1890.	1889.
Art	2,115	1,347
Geometry, P. P. and S.	502	213
Machine Construction	553	291
Building Construction	40	33
Mathematics	600	247
Mechanics (Theoretical)	35	20
Do. (Applied)	165	57
Mechanical Engineering	—	13
Sound, Light, and Heat	128	56
Magnetism and Electricity	204	138
Chemistry (Theoretical and Practical)	818	383
Geology	8	2
Physiology	128	130
Botany	37	22
Biology	16	11
Steam	64	29
Physiography	418	97
Hygiene	95	76
Zoology	9	—
	5,935	3,165

COMMERCIAL SUBJECTS AND SPECIAL CLASSES.

Commercial Arithmetic	1,210	276
Book-keeping	1,066	431
Commercial English	1,154	268
Commercial Geography	255	50
Commercial Handwriting	1,068	182
Typewriting	415	102
Shorthand	1,229	782
French	681	345
German	132	81
Latin	13	32
Spanish	223	143
Matriculation	8	15
Dressmaking, &c.	246	—
Political Economy	70	—
Portuguese	18	—
	7,788	2,707

MISCELLANEOUS SUBJECTS.

	1890.	1889.
Manual Instruction, Singing, &c.	475	305
Elementary Evening Schools	8,870	8,180

SUMMARY OF THE FOREGOING.

Evening Schools for Science and Art, and Technical Subjects	5,935	3,165
Commercial Schools and Special Classes......	7,788	2,707
Miscellaneous Classes	475	305
Elementary Evening Schools......................	8,870	8,180
Total entries	23,068*	14,357

It will be seen from these figures that very considerable progress has been made since we received the assistance from the City Council, and encouraged by these successes the Board, at a meeting held in March of the present year, resolved that an application should be made to the Manchester City Council for the sum of £5,500, being the estimated amount which will be required for the purpose of carrying on the schools and classes to be conducted under the Technical Instruction Act, 1889, during the ensuing session of 1891-2, and to meet the balance overspent upon the work of the session just closed. Upon making up the account of the classes at the end of the present session, it was found that whilst the sum of £1,000 had been received from the City Council the net expenditure had been £2,458, leaving a deficiency of £1,458. The large increase of pupils this session, in excess of the number estimated when the £1,000 was asked for, fully accounts, however, for the increased expenditure. The question of the needs of next session have been carefully considered—detailed estimates have been prepared, and it appears that £5,500 will be required to carry out the scheme submitted and to meet the balance overspent for the session just closed. It is proposed to increase the number of science and art evening schools from six to twelve, the number of commercial evening schools from five to ten, and to establish four special centres for technical instruction for women and girls. Upon the claims of this class of pupils I should like to remark that, looking to the practical good which may be effected by the wise expenditure of money now available for technical instruction, it is of the highest importance that although the claims of higher instruction, as in science and art applied to manufactures, are of vital importance to men and boys, the instruction of women and girls in what I may perhaps be pardoned for calling the domestic arts, is in no sense secondary. Writing some time ago upon this subject, I pointed out that H.M. Inspectors of Schools tell us that in the northern manufacturing towns the needlework found in the elementary schools is far inferior to the work of children in the agricultural districts and of the sister isle—particularly in those schools which are taught by ladies belonging to religious orders. What is true of needlework is also true in a great measure of cookery, which I regret to say is practically unknown as an art in the poorer districts of the manufacturing towns. The time has arrived when it is absolutely necessary that young women and girls should be taught the elements of these things. And, although a great deal may be done in the day schools, the requirements of the Code are such that, whilst in the standards, the girls have not time to be adequately trained in all the various departments of manual instruction suitable for them, consequently it appears necessary to establish schools where either during the day or evening, or perhaps both, suitable instruction under duly qualified teachers shall be given in properly appointed rooms fitted up with the necessary appliances for manual subjects. Technical instruction for girls is somewhat simpler to manage than the like instruction for their brothers, and I think that it can be summed up under the following heads: (*a*) Needlework, to include the measuring and cutting out of dresses and articles of underclothing; (*b*) cookery; (*c*) laundry work, so far as such work treats of ironing, washing, and clear starching of clothes with the simple appliances to be found in cottage homes; and (*d*) sick nursing, and general instruction in domestic economy. Past experience proves the necessity for technical instruction for women and girls, and the Manchester School Board intend that particular attention shall be given to perfecting the instruction of senior and adult pupils on the lines proposed. Such, briefly, are our plans in Manchester for the next session, and I have referred to them simply for the purpose of showing what it is possible for a School Board to do when there is granted to them a share of the money available for technical instruction.

---

* In 1891 the number of entries had risen to 31,102.

There is a very large field of work in this direction. From my own experience of the work I know that a good deal of it must be done in a missionary spirit. No doubt the expenditure necessary for this work will reach large dimensions, but of the practical utility I think there can be no question. Most of the Board Schools in large towns are conveniently situated and are properly equipped for evening instruction, and in the case of all new Board Schools it is possible to go further in this direction by arranging at the time of erection, without any serious additional expense, to make adequate provision in the shape of a chemical laboratory, which may be used both for day and evening work, and also by the addition of a few rooms for the purposes of manual instruction.

In connection with this work of technical instruction we have heard something of rivalry between the various institutions receiving aid from South Kensington. I for one would be sorry that there should not be some sort of competition in connection with the provision of facilities for evening instruction. Speaking of my own knowledge of what has been done in Manchester, I can say, without fear of contradiction, that we should not have arrived at the position we now occupy if it had not been for the healthy competition which has existed between the leading institutions engaged in the work of providing such instruction. I should be one of the very first to admit that we ought to have some order and method in connection with the carrying on of the work, but I do not think that any wise method of co-ordination is likely to be brought about by adopting artificial methods of classifying instruction and institutions. It would not be wise to say to the students, "For certain subjects you must attend certain classes or certain institutions." I do think, however, that the problem may be solved by a wise system of scholarships, and consequently I think it has been well that the Legislature has passed the Act of the present session which clears up all doubt and difficulty about the giving of scholarships out of the money available for technical instruction. I should like to see a modest scheme of scholarships prepared in connection with our evening schools. I do not think, looking to the low charge made for fees, that these scholarships need be very costly, and without going into detail I would briefly say that I believe they should be progressive in their operation, that they should be designed not only to carry on intelligent and hard-working pupils through the various courses of instruction for their own benefit, but also at the same time such scholarships act as an attraction to the evening schools.

I do not think it is at all likely that we shall ever see direct compulsion applied to attendance at evening schools; consequently the progress of the schools will largely depend upon the attractions which they have to offer to their pupils; and evening schools in their early stages will have to compete with the attractions of the streets and the various places of amusement if they are to get within their walls a large proportion of young people. To state the case briefly, I think it would not be difficult to arrange such a scheme of scholarships that first we might attract the best of our pupils from the elementary evening schools into the science and art and commercial evening schools, and afterwards carry on the *élite* of the pupils to higher places of instruction.

I thought this subject was of sufficient importance to bring before a conference of those who are directly interested in School Board work. It seems to me that it is incumbent upon all boards to take an active interest in this important subject of technical instruction, and that it will mainly depend in the long run upon the action of our School Boards as to whether the large advantages which are now offered for the promotion of technical instruction are made properly available for the benefit of the great mass of the inhabitants of our large towns.

INDEX.

A

PAGE

Advanced Evening Schools—Technical Instruction 54
Commercial Evening Schools 54
Evening Institutes for Women and Girls 78
Science and Art Evening Schools 89
Advanced Technical Instruction 189
Advertising of Elementary Evening Schools 35
American System of Manual Instruction 138
Application of Contributions by Local Authority (Scotland)...... 240, 241
Apparatus—Science and Art Classes 106, 110, 112
Chemistry 106, 108
Apparatus and Chemicals—Laboratory for 48 Students 110
Appendix, Part I.—The Technical Instruction Acts, 1889, 1891...... 219, 232
The Technical Instruction Acts (Scotland), 1887, 1892 .... 235, 240
The Local Taxation (Customs and Excise) Act, 1890 224
The Education Code (1890) Act, 1890 230
The Schools for Science and Art Act, 1891 234
Appendix, Part II.—Plans, Fittings, Specifications, &c. 243
I. Chemical Laboratories 245
II. Cookery Rooms 249
III. Laundries 252, 254
IV. Manual Instruction Rooms 255
Appendix, Part III.—"Evening Schools," paper read at Liverpool 259
"School Boards and Technical Instruction," paper read at Huddersfield 269
Arithmetic—Elementary Continuation Schools 14
Commercial Evening Schools 59
Art—Subjects of Instruction 103, 166
Teachers 128
Grants 130
Attendance—Elementary Evening Schools Statistics 8
Returns of Evening Continuation Schools 35
Technical Schools (Scotland) 238
Audit—Accounts of Technical Instruction 222

B

PAGE

Balance Sheets—Evening Continuation Schools 41
    Commercial Evening Schools 76
    Evening Institutes for Women and Girls 87
    Science and Art Evening Schools 133
    Higher Grade Schools 179
Banking—Lectures 65
Benches—Wood Carving 24
    Manual Instruction 146, 256
Book-keeping—Elementary Continuation Schools 15
    Commercial Evening Schools 59
Boys and Young Men, Special Elementary Subjects for 14
Buckmaster, Mr. J. C.—On Science and Art Evening Schools 90

C

Cash Book—Instruction in Book-keeping 16, 59
Certificates—Elementary Drawing (Pupils) 31
    Cookery (Pupils) 32
    Cookery Advanced (Pupils) 83
    Dressmaking (Pupils) 83
    Laundry-work (Pupils) 83
    Sick-nursing (Pupils) 83
    Manual Instruction (Teachers) 149
    City and Guilds of London Institute 202
Chemical Laboratories 106, 107
    Apparatus, &c. 110
    Plans 245
City and Guilds of London Institute 197
    Programme of Technological Subjects 197
    Regulations 197
    Local Committees 201
    Qualifications of Teachers 202
    Certificates 202
    Grants to London Classes 204
    Memorandum for County Councils, &c. 206
Claims—Science and Art Payments 132
Code Requirements—Evening Continuation Schools 38, 43
    Commercial Evening Schools 74
    Evening Institutes for Women and Girls 86
Combination of School Boards (Scotland) 238
Commercial Evening Schools 54
    Scheme of Instruction 55
    Time Tables 56
    Subjects of Instruction 58
    Commercial Handwriting and Composition 58

PAGE

Commercial Arithmetic ... 59
Book-keeping ... 59
Shorthand ... 60
Typewriting ... 61
Modern Languages ... 63
Geography and History ... 63
Lectures ... 65
(1) Banking ... 65
(2) Insurance ... 66
(3) Commercial Law ... 67
Prizes ... 67
Examinations ... 70
Hints on General Management ... 71
Summer Session ... 72
Tickets of Membership ... 72
Schools for Women and Girls ... 72
Bursaries and Scholarships ... 72
Restaurant ... 72
Reference Library ... 73
Monthly Magazine ... 73
Parties ... 73
Fees ... 74
Code Requirements ... 74
Grants ... 75
Teachers ... 75
Balance Sheets ... 76

Commercial Geography and History—Commercial Evening Schools... 63
Commercial Law—Lectures ... 67
Committees—Science and Art Schools and Classes ... 95
Duties of ... 96
Conditions—Technical Instruction Schools (Scotland) ... 236
Confirmation of Resolutions—Technical Instruction (Scotland) ... 236
Conscience Clause ... 220
Continuation Schools, Evening ... 8
Cookery Instruction ... 24
Stoves ... 25, 251
Lessons ... 25
Utensils ... 26
Chest ... 27, 250
Code Requirements ... 27
Teachers ... 27, 153
Scholars' Certificates ... 31, 83
Advanced ... 80
Teachers' Diplomas ... 153
Rooms ... 249

Coward, Mr. W. Scott—On Evening Schools ... 9

PAGE

Customs and Excise Duties—(England) 224, 232
(Scotland) 225
(Ireland) 226
Distribution 228
Cylinders—Oxygen and Hydrogen, Lantern Lectures 22

D

Deaf Mutes—Classes 153
Distribution of Prizes—Evening Schools 31
Drawing—Elementary 14
Certificates (Pupils) 31
Dressmaking 28, 80
Certificates (Pupils) 83

E

"Education Code (1890) Act, 1890" 230
Elementary Education not a condition of Evening School Grants 230
Elementary Evening Schools. *See* Evening Continuation Schools.
English History 16
Entrance Examination 221
Evening Continuation Schools—Statistics 8
Scheme of Instruction 11
Time Tables 11
Elementary Subjects 14
Special Subjects 14, 24
Science 14
Art 14
Shorthand 15
Book-keeping 15
English History 16
Geography 17
Wood Carving 24
Cookery 24
Needlework and Cutting-out 28
Dressmaking 28
List of Subjects 29, 48
Grants 29, 40
Prizes 29
Certificates 31
Examinations 32
Hints on General Management 34
Fees 38
Code Requirements 38, 43
Teachers 39

Page

Balance Sheet 41
Evening School Code 43

Evening Institutes for Women and Girls 78
Scheme of Instruction 78
Time Tables 79
Cookery (Advanced) 80
Millinery 80
Needlework and Cutting-out 80
Dressmaking 80
Laundry Work 81
Lectures—Sick Nursing 81
Physiology—Human 82
English Literature 82
Prizes and Certificates 82
Examinations 83
Exhibitions of Work 84
Hints on General Management 86
Fees 86
Code Requirements 86
Teachers 87
Grants 87
Balance Sheet 87

Evening Schools—Advanced. *See* Advanced Evening Schools.

Evening School Code 43

"Evening Schools"—Paper read at School Board Clerks Conference (1889) 259

Examinations—Evening Schools 32
Commercial Evening Schools 70
Society of Arts 70
Union of Lancashire and Cheshire Institutes 70
Evening Institutes for Women and Girls 83
Science and Art Schools and Classes 121, 211
Manual Instruction (Pupils) 143
Manual Instruction (Teachers) 149
Cookery (Teachers) 153
Laundry Work (Teachers) 153
Higher Grade Schools 176

Exhibitions of Work—Evening Institutes for Women and Girls 84

F

Fees—Evening Continuation Schools 38
Commercial Evening Schools 74
Evening Institutes for Women and Girls 86
Science and Art Evening Schools 129
Higher Grade Schools 179

PAGE

Fittings—Science and Art 106
  Manual Instruction 147, 255
  Chemical Laboratories 245
  Cookery Rooms 249
  Laundries 252, 254
Free Studentships 126, 211
French System of Manual Instruction 139

G

Geography 17
  Commercial Geography and History 63
Girls and Young Women, Special Elementary Subjects for 24
  Evening Institutes 78
Grants—Evening Continuation Schools 29, 40
  Commercial Evening Schools 75
  Evening Institutes for Women and Girls 87
  Science and Art 129, 130
  Manual Instruction 142, 149
  Higher Grade Schools 179

H

Handwriting and Composition—Commercial 58
Higher Grade Schools 159
  Schemes of Instruction 161
  Organised Science Schools 163
  Art Instruction 166
  Literature 166
  Commercial Subjects 167
  Time Tables 167
  Scholarships and Prizes 172
  Examinations 176
  Hints on General Management 176
  Teachers 178
  Fees 179
  Grants 179
  Balance Sheets 179
  Plans 183
Hints on General Management—Evening Continuation Schools 34
  Commercial Evening Schools 71
  Evening Institutes for Women and Girls 86
  Science and Art Evening Schools 119
  Manual Instruction 143
  Higher Grade Schools 176

PAGE

History—English 16
Commercial 63
Hydrogen—Compressed (Lanterns) 22

I

Insurance—Lectures 66
Introduction 1
Ireland—Application of Technical Instruction Act (1889) 222
Intermediate Education 227

L

Laboratories—*See* Chemical Laboratories.
Lancasterian Scholarships 175
Languages—*See* Modern Languages.
Lantern Lectures—Slides 18, 23
Screens 23
Oxygen and Hydrogen 22
Geography 18
Lanterns 22
Laundry Work—Instruction 81
Lessons 81
Certificates 83
Teachers 153
Rooms and Fittings 252, 254
Law, Commercial—Lectures 67
Lectures—Commercial Evening Schools—Banking 65
Insurance 66
Commercial Law 67
Sick Nursing 81
Ledger—Instruction in Book-keeping 16, 59
Libraries—Reference—Commercial Evening School 73
Science School 134
Literature 14, 82, 167
Local Authorities—Power to supply Technical Instruction 219, 232
Provisions Affecting 221
Provisions Affecting (Scotland) 240
Local Rate 219, 221, 222

M

Magic Lanterns—*See* Lantern.
Management, Hints on—Evening Continuation Schools 34
Commercial Evening Schools 71
Evening Institutes for Women and Girls 86

PAGE
Science and Art Evening Schools ... 119
Manual Instruction ... 143
Higher Grade Schools ... 176

Manual Instruction in Woodwork ... 136
American System ... 138
French System ... 139
Swedish System ... 139
Scheme for Day and Evening Schools ... 139
Directions of Science and Art Department ... 140
Regulations of Science and Art Department ... 142
Grants ... 142, 149
Examinations ... 143
Hints on Organization of Classes ... 143
Teachers ... 144, 149
Workshops ... 146, 255
Benches ... 146, 256
Tools and Fittings ... 147, 255
Certificates for Teachers ... 149

Matriculation Classes ... 157

Meaning of Technical and Manual Instruction ... 223, 239, 242

Millinery ... 80

Miscellaneous Classes ... 152
Singing ... 152
Deaf Mutes ... 153
Teachers' Diplomas in Cookery ... 153
Teachers' Diplomas in Laundry Work ... 153
Matriculation ... 157
Orchestral Music ... 157

Modern Languages—Commercial Evening Schools ... 63

Monthly Magazine for Evening Schools ... 73

Music, Orchestral ... 157

N

National Scholarships ... 126, 211

Needlework and Cutting-out ... 28, 80

Nursing—Lectures ... 81
Certificates (Pupils) ... 83

O

Orchestral Music ... 157

Organized Science Schools ... 163

Oxygen—Compressed, for Lanterns ... 22

P

PAGE

Parliamentary Grants—Technical Instruction ... 221
Physiology—Human ... 82
Plans—Higher Grade Schools ... 183
  Chemical Laboratory ... 245
  Cookery Rooms ... 249
  Laundries ... 252, 254
  Manual Instruction Rooms ... 255
Premises for Science and Art Classes ... 106
Prizes—Evening Schools ... 29
  Selection of ... 30
  Distribution ... 31
  Commercial Evening Schools ... 67
  Society of Arts ... 67
  Evening Institutes for Women and Girls ... 82
  Science and Art Schools ... 125
  Higher Grade Schools ... 172

Q

Qualifications of Teachers—Evening Continuation Schools ... 39
  Science Classes, &c. ... 126
  Art Classes ... 128
  City and Guilds of London Institute ... 202

R

Registration—Science and Art Schools, &c. ... 98
Regulations—Science and Art Department. *See* Science and Art Department.
  City and Guilds of London Institute ... 197
Representation ... 220
Restaurants for Pupils of Evening Schools ... 72
Returns of Attendance—Evening Continuation Schools ... 35
Royal Exhibitions ... 126, 211

S

Schemes of Instruction—Evening Continuation Schools ... 11
  Commercial Evening Schools ... 55
  Evening Institutes for Women and Girls ... 78
  Science and Art Evening Schools ... 91
  Manual Instruction ... 139

PAGE

Higher Grade Schools ... 161
City and Guilds of London Institute ... 197
Scholars Admissible to Technical Schools (Scotland)... 238
Scholarships, Exhibitions, and Bursaries—Commercial Evening Schools ... 72
Science and Art Scholarships and Exhibitions ...126, 173, 211
Higher Grade Schools ... 172
Lancasterian Scholarships... 175
Scholarships (Technical Instruction Acts) ... 232
School Boards and Technical Instruction ...220, 221
Scotland ...235, 237, 241
"**School Boards and Technical Instruction**"—Paper read at School Board Clerks Conference (1891)... 269
School Fees. *See* Fees.
"**Schools for Science and Art Act, 1891**"... 234
Science and Art Department, Regulations of—
Formation of Committee ... 95
Duties of Committee... 95
Regulations... 97
Registration of Students ... 98
Register and Attendance ... 98
Subjects of Instruction—Science ... 102
Subjects of Instruction—Art ... 103
Premises, Fittings, and Apparatus ... 106
Chemical Laboratories ...106, 110
Apparatus ... 112
Grants ...129, 130
Teachers, Science and Art...126, 128
Examinations ...121, 211
Scholarships and Exhibitions, &c. ...126, 211
Claims for Payments... 132
Directions as to Manual Instruction ... 140
Regulations as to Manual Instruction... 142
Grants, Manual Instruction ...142, 149
Examinations, Manual Instruction ... 143
Organised Science Schools ... 163
Science and Art Evening Schools... 89
Statistics... 89
Schemes of Instruction... 91
Time Table... 94
Rules and Regulations of Science and Art Department ...95, 97
Formation of Committee ... 95
Duties of Committee... 95
Registration of Students ... 98
Registers and Attendance... 98
Subjects of Instruction... 102

PAGE

Premises, Fittings, and Apparatus ... 106
Chemical Laboratories ..106, 110
List of Apparatus and Chemicals required for Laboratory ... 110
Apparatus, &c., for Science Teaching ... 112
Hints on General Management ... 119
Examinations ... 121
Prizes, Exhibitions, and Scholarships ... 125
Teachers, Science ... 126
Teachers, Art ... 128
Fees ... 129
Grants, Science ... 129
Grants, Art ... 130
Claim for Payments ... 132
Balance Sheet ... 133
Libraries for Science ... 134

Science and Art Scholarships ...126, 173

Science Instruction—Subjects ... 102
Premises, Fittings, and Apparatus ... 106
Chemical Laboratories ...106, 110, 245
Apparatus ... 112
Grants ... 129
Teachers 126

Screens—Lantern Lectures ... 23

Selection of Prizes—Evening Schools ... 30

Shorthand—Elementary Continuation Schools ... 15
Commercial Evening Schools ... 60

Sick Nursing—Lectures ... 81
Certificates (Pupils) ... 83

Singing Classes ... 152

Slides for Lantern Lectures (Geography) ...18, 23

Social Parties ... 73

Society of Arts—Prizes ... 67
Examinations ... 70

Special Subjects—Elementary, for Boys and Young Men ... 14
For Girls and Young Women ... 24

Statistics of Attendance, &c.—Elementary Evening Schools ... 8
Science and Art Instruction ... 89

Stoves for Cookery Instruction ...25, 251

Subjects of Instruction—Evening Continuation Schools ... 14
Technical Instruction in Commercial Evening Schools ... 58
„ „ Evening Institutes for Women and Girls ... 80
„ „ Science ... 102
„ „ Art ... 103
Higher Grade Schools ... 161
City and Guilds of London Institute ... 197

Subjects of Technical Instruction ... 214

PAGE

Summer Session—Commercial Evening Schools ... 72
Swedish System of Manual Instruction ... 139
Syllabus of Drawing—Elementary Evening Schools ... 14

T

Teachers—Cookery ... 27, 153
  Evening Continuation Schools ... 39
  Commercial Evening Schools ... 75
  Evening Institutes for Women and Girls ... 87
  Science ... 126
  Art ... 128
  Laundry ... 153
  Manual Instruction ... 144, 149
  Higher Grade Schools ... 178
  City and Guilds of London Institute ... 202
Technical Instruction ... 54, 189
  Technical Instruction Subjects ... 214
Technical Instruction. Acts of Parliament—
  The Technical Instruction Act, 1889 ... 219
  „ „ 1891 ... 232
  „ „ (S) 1887 ... 235
  „ „ (S) 1892 ... 240
  The Local Taxation (Customs and Excise) Act, 1890 ... 224
  The Education Code (1890) Act, 1890 ... 230
  The Schools for Science and Art Act, 1891 ... 234
  Power of Local Authority to Supply ... 219, 232
  Local Rate ... 219, 221, 222
  Not applicable to Child in Standards ... 219
  Conscience Clause ... 219
  Requirements of School Board or Managers of School, &c. ... 220
  Aid to be given to correspond with amount of Technical Instruction supplied ... 220
  Representation ... 220
  Science and Art Department to Settle Disputes ... 220
  Discretion of Local Authority ... 232
  Scholarships and Fees ... 232
  Local Authority may Appoint Committee ... 221
  Existing Power of School Boards ... 221
  Entrance Examination ... 221
  Conditions of Parliamentary Grants ... 221
  Local Authorities ... 221
  Powers to Borrow Money ... 222
  Audit of Accounts ... 222
  Ireland—Application of Acts to ... 222

PAGE

Meaning of Technical and Manual Instruction ... 223
Trades not to be Taught ... 223
Share of Customs and Excise Duties—In England ... 224, 232
In Scotland ... 225
In Ireland ... 226

Technical Instruction Acts (Scotland) ... 235
Powers of School Board to supply Technical Instruction ... 235
To Fix Fees ... 235
Appointment of Teachers ... 235
Confirmation of Resolutions ... 236
Conditions under which Schools are to be conducted ... 236
Duties and Powers of School Board ... 237
Borrowing Powers ... 237
Schools may be discontinued ... 238
Combination of School Boards ... 238
Transfer of existing Technical Schools ... 238
Scholars admissible ... 238
Meaning of Technical Instruction, &c. ... 239, 242
Powers of Local Authority ... 240
Application of Contributions (Local Taxation Act) ... 240
Schools to be aided ... 241
Application of Balances ... 241

Technological Examinations &c. ... 197

" The Evening Student "—Monthly Magazine ... 73

Tickets of Membership—Evening Schools ... 72

Time Tables—Evening Continuation Schools ... 11
Commercial Evening Schools ... 56
Evening Institutes for Women and Girls ... 79
Science and Art Evening Schools ... 94
Higher Grade Schools ... 167
Organised Science Schools ... 170

Tools—Wood Carving ... 24
Manual Instruction ... 147

Trades not to be Taught ... 223

Transfer—Science and Art Schools ... 234
Technical Instruction Schools (Scotland) ... 238

Typewriting—Commercial Evening Schools ... 61

Typewriting Machines ... 62

U

Union of Lancashire and Cheshire Institutes—Prizes, &c. ... 67, 68
Examinations ... 70

Utensils—Cookery Instruction ... 26

UNIVER

W

Page

Welsh Intermediate Education 225
Whitworth Scholarships and Exhibitions........126, 213
Women and Girls—Special Commercial Evening Schools 72
Evening Institutes........ 78
Wood Carving 24
Woodwork—*See* Manual Instruction.
Woodward, Dr. C. M., on Manual Instruction 137
Workshops—Manual Instruction 146, 255

John Heywood, Excelsior Printing and Bookbinding Works, Manchester.

UNIVERSITY OF CALIFORNIA LIBRARY

THIS BOOK IS DUE ON THE LAST DATE
STAMPED BELOW

OCT 6 1915
NOV 15 1916
APR 23 1917
MAR 31 1919
JUN 11 1930
21Jul'53CR
JUL 2 4 1953 LU
RECEIVED
DEC 1 5 '67 -8 PM
DEC 2 '67 -2 PM
LOAN DEPT.

30m-1,'15

YC 59707

53190

LC5256
G7W9

UNIVERSITY OF CALIFORNIA LIBRARY